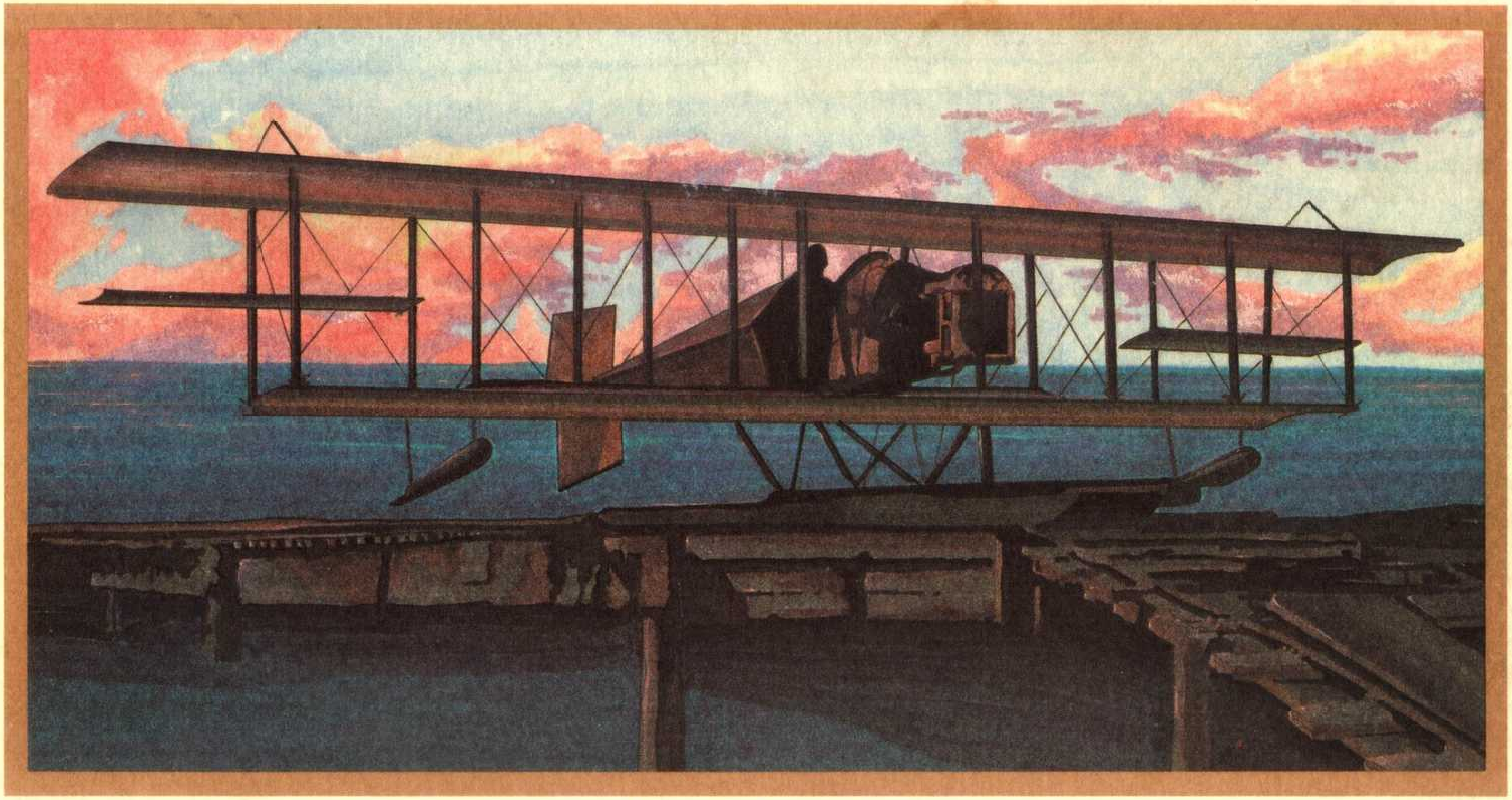
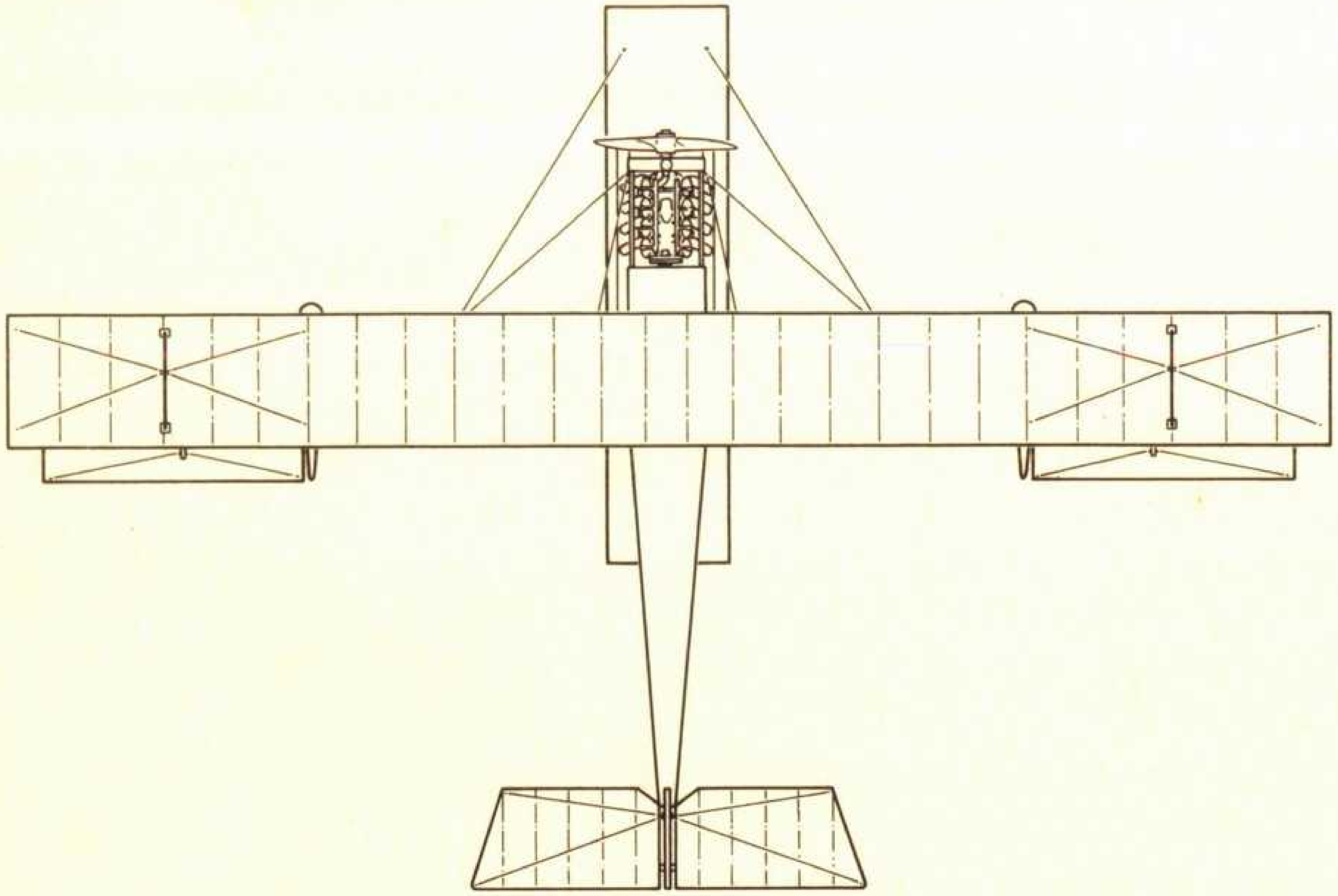
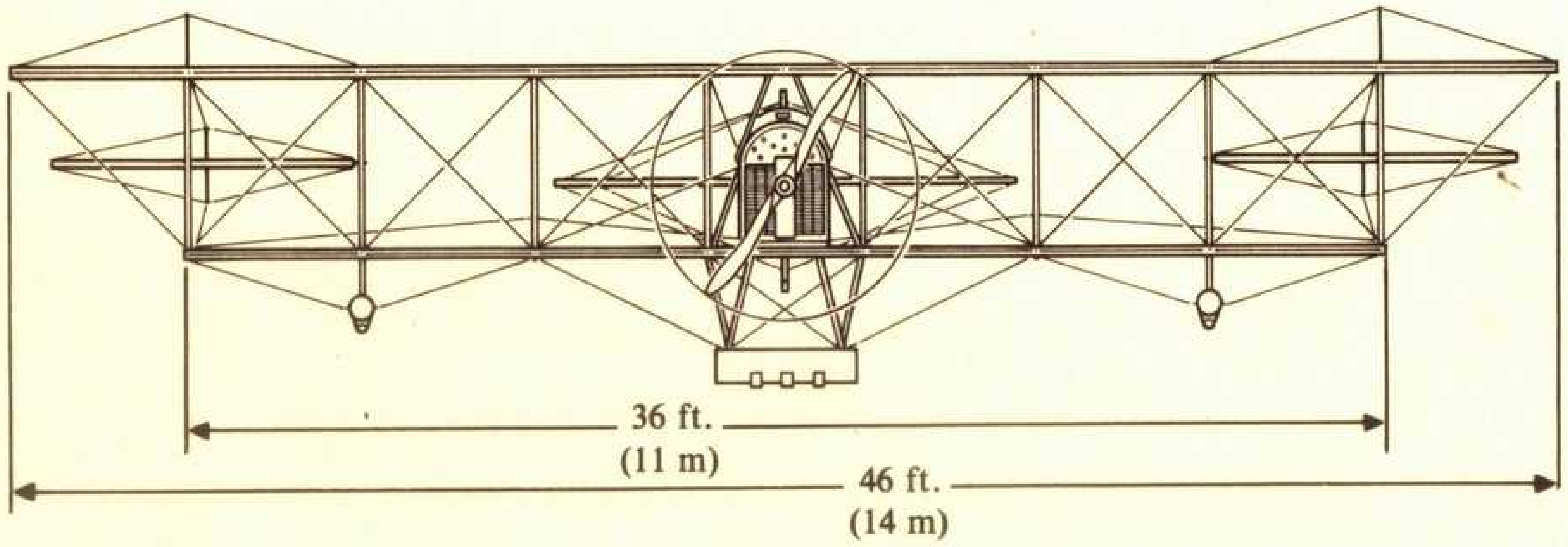
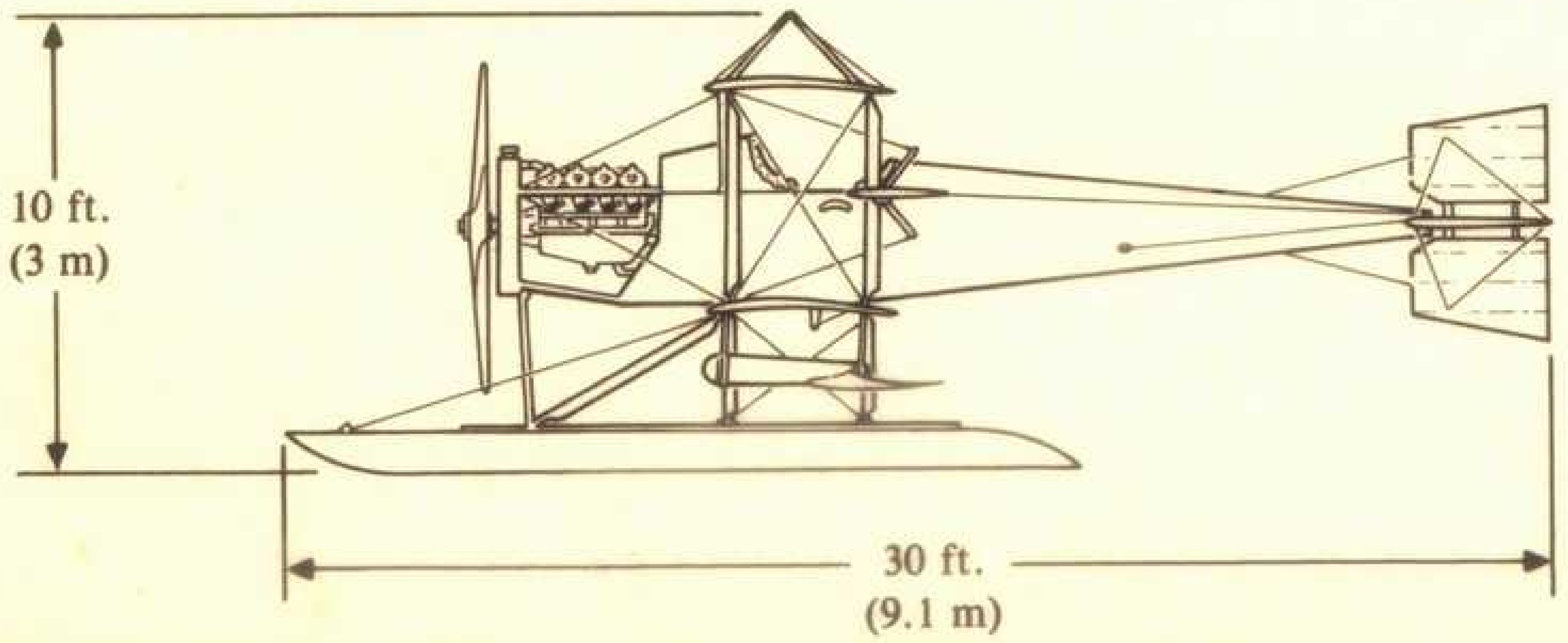


LOCKHEED

A PORTFOLIO OF AIRPLANES







LOUGHEAD MODEL G

Cruising speed: 51 mph (82 km/h)
Maximum speed: 63 mph (101 km/h)
Empty weight: 1,616 lb. (733 kg)
Service ceiling: unknown
Normal range: 60 miles (97 km)
Number produced: 1

Allan and Malcolm Loughead (a Scottish name pronounced ''Lockheed'') called their first aircraft the Model G, to give the impression that they had been in the aircraft business for some time. They built the biplane on the shores of San Francisco Bay between 1912 and 1913. It featured an 80-horsepower Curtiss engine and a sled-type pontoon. The wings consisted of fabric stretched and glued over a wooden frame.

On June 15, 1913, Allan, who had experience as a barnstorming pilot, lifted the aircraft off on its maiden flight. After a short hop, Allan returned to the beach and Malcolm climbed aboard. For 20 minutes the two brothers circled Alcatraz, Nob Hill and Market Street, reaching a height of 300 feet (91 m). Later that summer, when Allan was flying a San Francisco sportsman to San Mateo, the flying boat hit a levee while landing. Damage was minor, but the brothers put the aircraft in storage and set off to prospect in the California gold country. Unsuccessful, Allan returned to San Francisco as an auto mechanic. Malcolm left for Hong Kong to peddle a Curtiss biplane and then went to Mexico to work as an engineer on the Mexican government's lone aircraft.

In 1915 the brothers teamed up again and took their repaired Model G out of storage. At that year's Panama-Pacific Exposition in San Francisco they flew passengers two at a time on 10-minute joy rides. By the end of the fair the Lougheads had accumulated a profit of $4,000.

With this wealth, as well as additional funds provided by a machine shop owner, the brothers moved operations to Santa Barbara to form the Loughead Aircraft Manufacturing Company in 1916. The Model G arrived in crates because it could not fly the distance on the 8 gallons (30 L) of fuel its tank could hold. Reassembled, the Model G carried passengers on flights around the Santa Barbara Channel. In 1918 the brothers junked the Model G and sold its engine.

Since the flight of the Model G, more than 34,000 aircraft have borne the Lockheed name. For America's armed forces, Lockheed has provided fighters (P-38 Lightnings, F-80 Shooting Stars, and F-104 Starfighters) and maritime patrollers (Hudsons, P-2 Neptunes, P-3 Orions, and S-3 Vikings). For the traveling public, Lockheed has produced an impressive series of airliners (Electras, Constellations, L-188 Electras, and the L-1011 TriStars). Pioneering pilots set records in Lockheed Vegas. Today, records are broken by Lockheed SR-71 Blackbirds, the world's fastest aircraft.

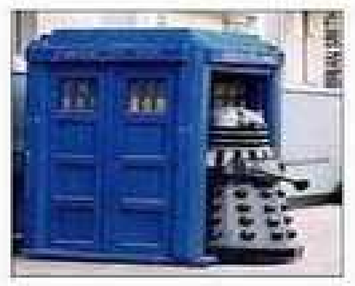
But Allan and Malcolm Loughead were looking more for business than records when they completed work on their second aircraft, the F-1 flying boat, in 1918. They demonstrated the aircraft for the Navy in hopes of gaining a contract for their design. Instead, the Navy asked them to build two Curtiss aircraft. A follow-on order was canceled when World War I ended, however. In 1919 Malcolm left the firm and Allan began construction of the S-1 sport biplane. This aircraft attracted little interest and Allan's company folded in 1921.

Five years later Allan organized the Lockheed Aircraft Company in the Los Angeles area, finally settling in Burbank. This firm produced the famous Vega and its derivatives. Lockheed's success attracted the interest of the Detroit Aircraft Corporation, which took over the California company a few months before the stock market crash of 1929.

The Lockheed subsidiary went on the auction block during the Depression's depths in 1932. A team led by Robert Gross bid $40,000 and founded a new company, the Lockheed Aircraft Corporation (now the Lockheed Corporation). Gross introduced the all-metal Model 10 Electra, which attracted such airlines as Pan American. With war forecast in Europe, the British gave Lockheed a contract for a bomber version of the Model 14 Super Electra — the Hudson. This contract for 250 aircraft (the largest awarded to any American aircraft firm up until that time) ensured the company's future.

Today's Lockheed is known for more than just its aircraft. With subsidiaries in New Jersey, Texas, Florida, Washington, and throughout California, it ranks among the top 50 industrial companies in the United States and among the top defense prime contractors. Lockheed's 80,000 employees build spacecraft and space systems, strategic missiles, airlifters, anti-submarine warfare and special mission aircraft, tactical weapon systems, electronic systems, and ships. They also provide technical, financial, information, and management services, and they process the nation's space shuttle fleet.

EX LIBRIS Scan Digit



The Doctor

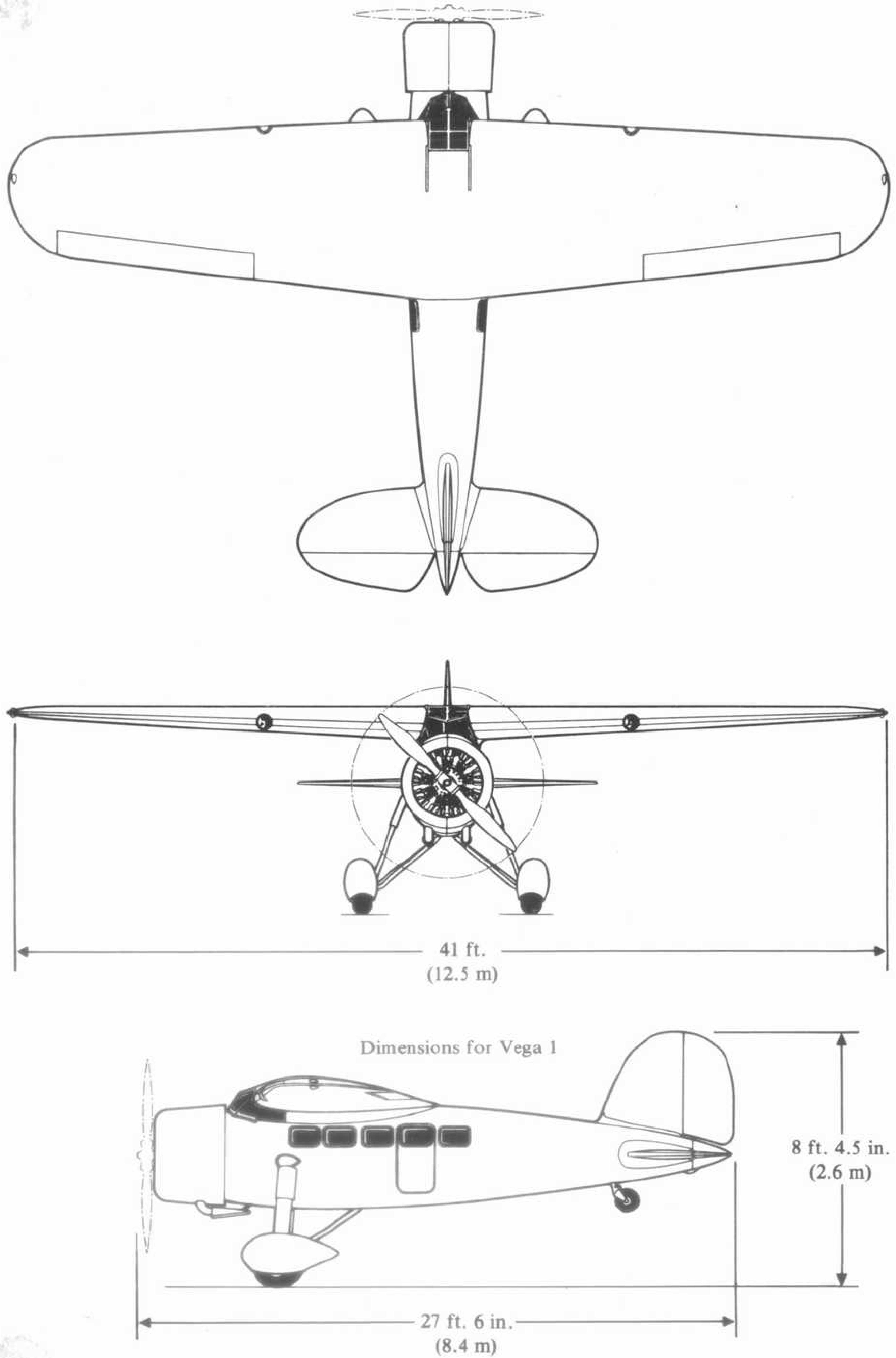
http://thedoctorwho1967.blogspot.com.ar/

http://el1900.blogspot.com.ar/

http://librosrevistasinteresesanexo.blogspot.com.ar/

https://labibliotecadeldrmoreau.blogspot.com/

Lockheed Vega



LOCKHEED VEGA

Operational data for Vega 1:

Cruising speed: 118 mph (190 km/h)	**Service ceiling: 15,000 ft. (4,570 m)**
Maximum speed: 135 mph (220 km/h)	**Normal range: 900 miles (1,450 m)**
Empty weight: 1,650 lb. (750 kg)	**Number produced by Lockheed: 115**

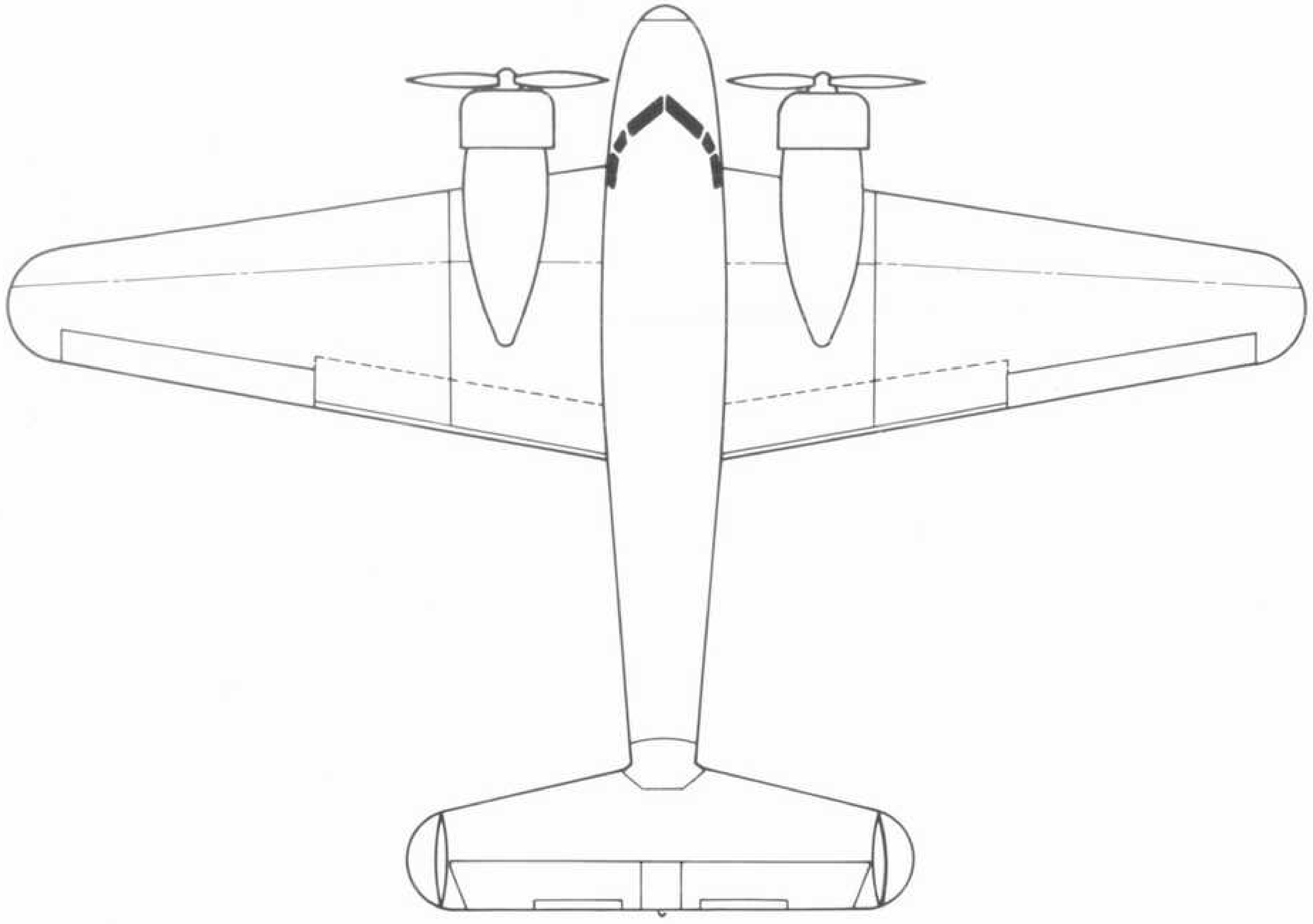
Designed in 1926 by Jack Northrop, the Vega featured molded plywood construction — a revoluntionary process Lockheed developed and patented. The single-spar wooden wing also was a radical change in aircraft design — most fliers were accustomed to struts on airplanes. Powered by a Wright J-5, 225-horsepower engine, the first Vega initially flew on July 4, 1927.

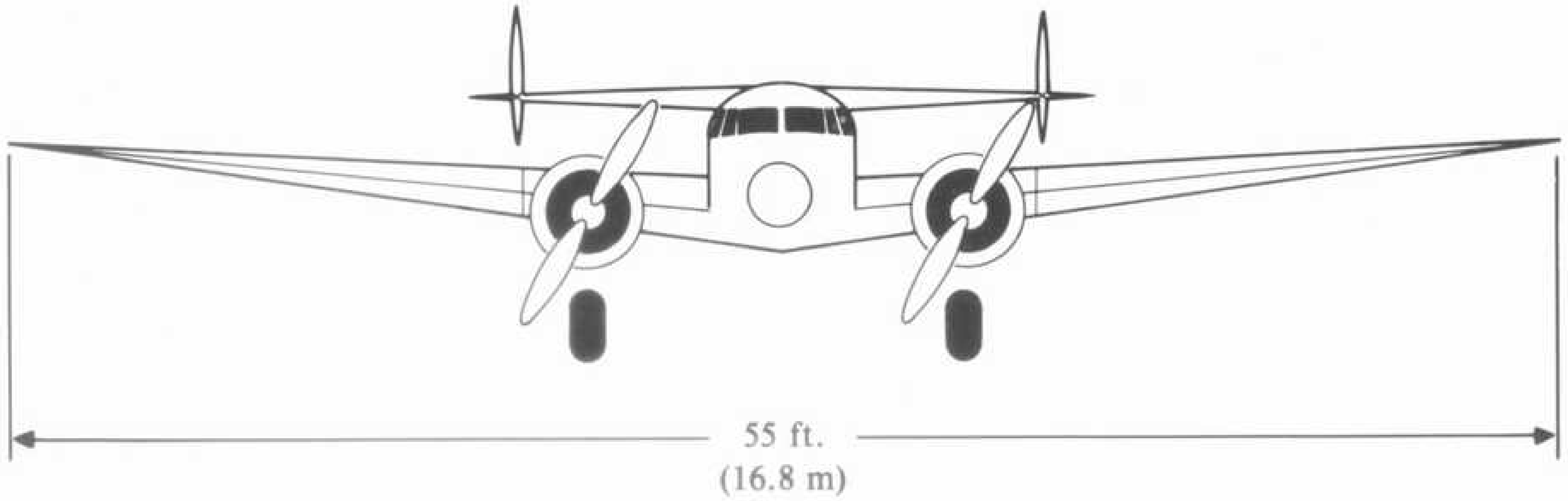
Lockheed's six-passenger Vegas quickly became a favorite of veteran pilots and were flown by business firms and at least 47 airlines. Bigger, faster engines pushed their speed to 185 mph (300 km/h). Landing-gear skirts and nose cowlings streamlined the little planes. It seemed like Vegas were setting distance or speed records every time a famous pilot took one up, spawning an early advertising slogan: "It takes a Lockheed to beat a Lockheed."

The Vega notched 34 world records in its meteoric career as well as several "firsts." Sir Hubert Wilkins' "Los Angeles" in 1928 became the first aircraft to fly over both polar regions. During the same year a Vega won the National Air Races. In 1932 Amelia Earhart piloted a Vega to become the first woman to fly the Atlantic solo. Wiley Post and his navigator, Harold Gatty, circled the globe with the "Winnie Mae" in just eight days and 16 hours in June 1931 to set a world record. Two years later Post repeated the trip alone in seven days and 19 hours — another record.

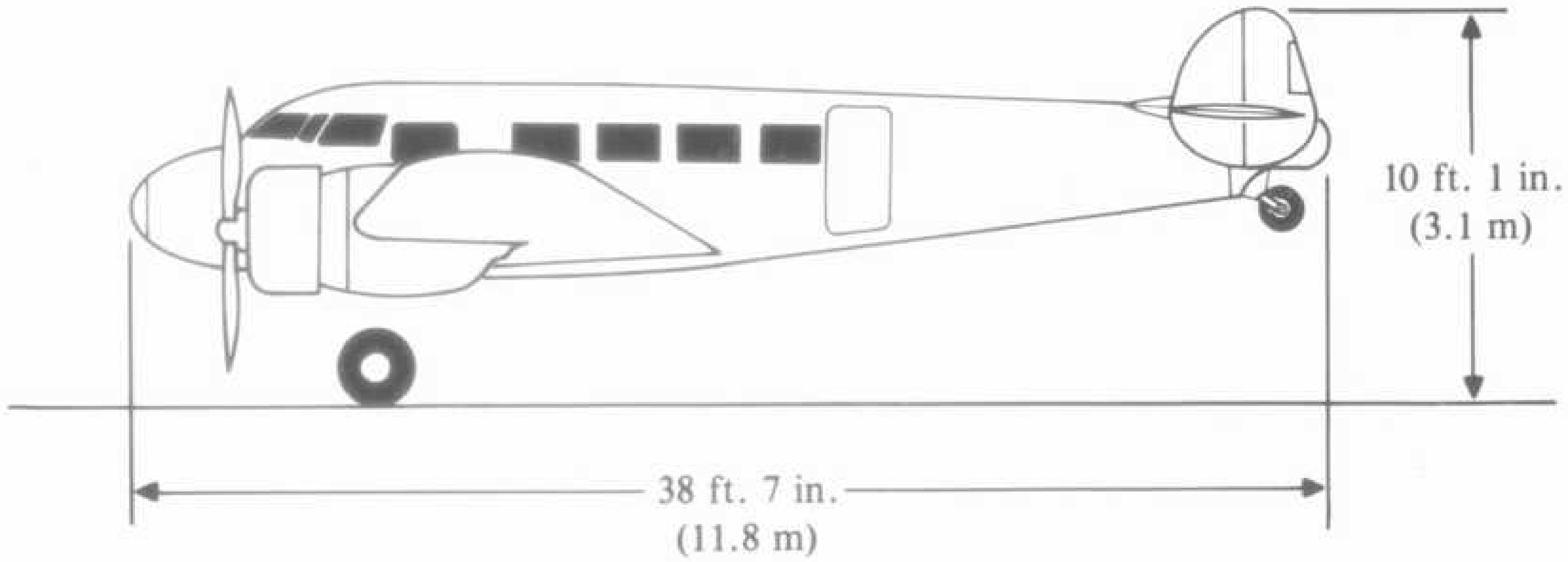
Lockheed derived five other aircraft from the basic Vega: the Air Express, the Explorer, the Sirius, the Altair, and the Orion. On behalf of Pan American Airways, Charles Lindbergh and his wife flew their Sirius to China to explore a trans-Pacific route for the airlines. The Orion was the first commercial airplane with a retractable undercarriage.

Lockheed Model 10 Electra





Dimensions for Model 10-A



LOCKHEED MODEL 10 ELECTRA

Operational data for Model 10-A:
Cruising speed: 190 mph (310 km/h)
Maximum speed: 202 mph (330 km/h)
Empty weight: 6,454 lb. (2,930 kg)
Service ceiling: 19,400 ft. (5,910 m)
Normal range: 810 miles (1,300 km)
Number produced by Lockheed: 149

After its reorganization in 1932, the Lockheed Aircraft Corporation began design work on its first aircraft, the Model 10 Electra. A two-engine, all-metal airplane that featured twin fins and rudders, the Model 10 contained room for 10 passengers and a crew of two. Lockheed began deliveries of Electras in 1934, selling them to such airlines as Pan American and Northwest. From the Model 10, Lockheed derived an entire line of small transports: the Model 12 Electra Jr., which carried six passengers, the Model 14 Super Electra, which flew 14 passengers, and the Model 18 Lodestar, which accommodated 18 passengers.

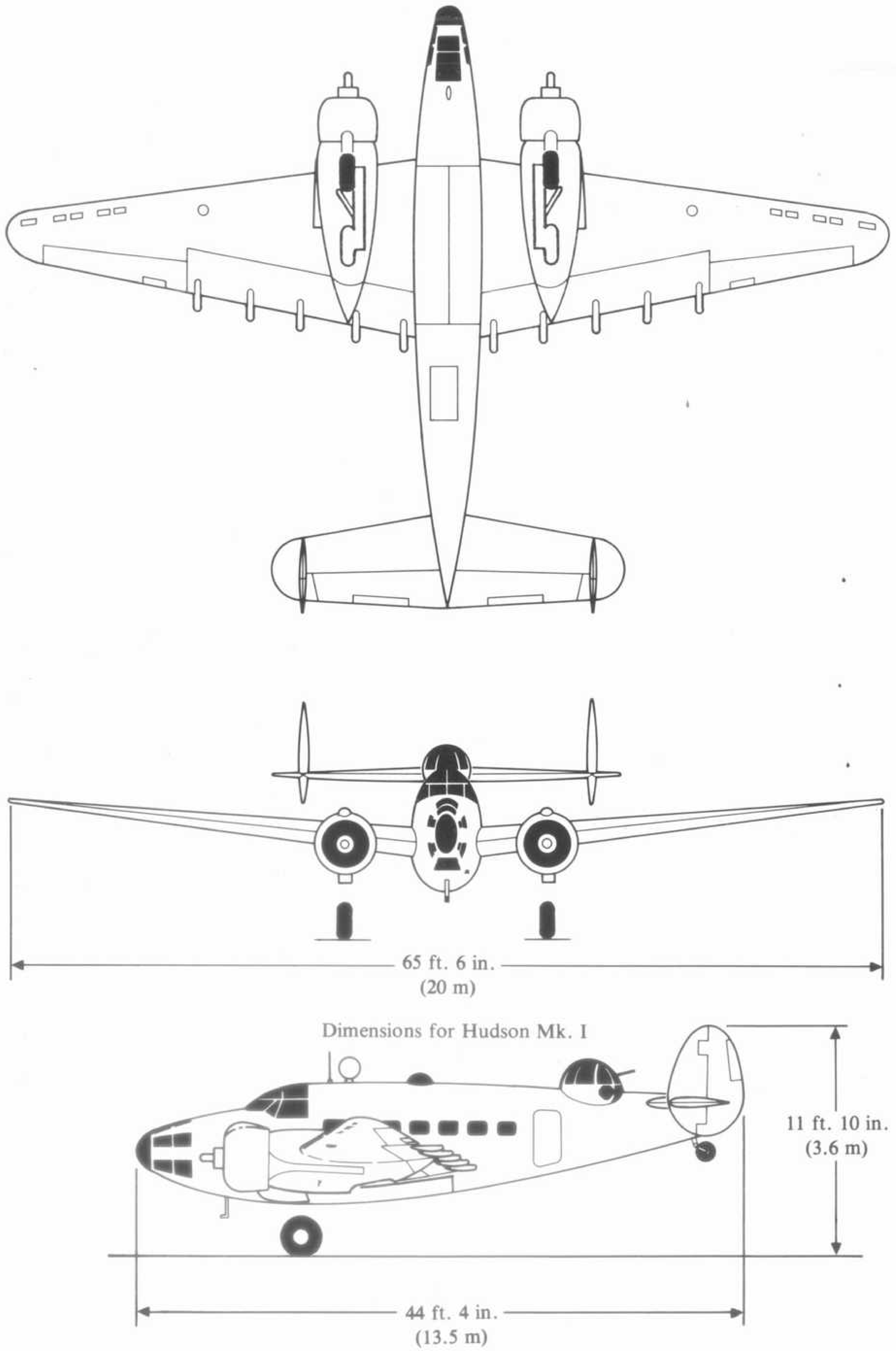
Although intended for use by feeder airlines, the majority of the 130 Model 12s were sold to corporations as executive aircraft. The Model 14 Super Electra introduced Fowler flaps to production aircraft. These flaps increased drag for approaches and also expanded the wing area to reduce take-off distance. Lockheed produced a total of 112 Super Electras.

The Lodestar's top speed of almost 270 mph (430 km/h) significantly exceeded that of contemporary airliners. With war approaching, however, the huge majority of the 625 Model 18s Lockheed built became military transporters rather than commercial carriers. Interestingly, pre-war licensing contracts allowed the Japanese to construct 119 Super Electras and 121 Lodestars.

Perhaps the most famous Electra was one flown by Amelia Earhart, who disappeared over the Pacific as she attempted a round-the-world flight in 1937. Pilots of another Electra received aviation's coveted Harmon Trophy for the first commercial trans-Atlantic round trip. Billionaire Howard Hughes flew a Super Electra on a round-the-world flight in 1938 that included stops in Moscow and Paris. Both Electras and a Super Electra transported Prime Minister Neville Chamberlain between London and Munich, where he signed the historic peace accord with Adolf Hitler in 1938.

The Model 14 spawned the Hudson bomber, which guarded the seas for Britain during World War II. The Ventura and Harpoon maritime patrollers were descended from the Lodestar.

Lockheed Hudson



Dimensions for Hudson Mk. I

LOCKHEED HUDSON

Operational data for Hudson Mk. I:

Cruising speed: 220 mph (350 km/h)

Maximum speed: 246 mph (400 km/h)

Empty weight: 11,630 lb. (5,280 kg)

Service ceiling: 25,000 ft. (7,620 m)

Normal range: 1,960 miles (3,150 km)

Number produced by Lockheed: 2,941

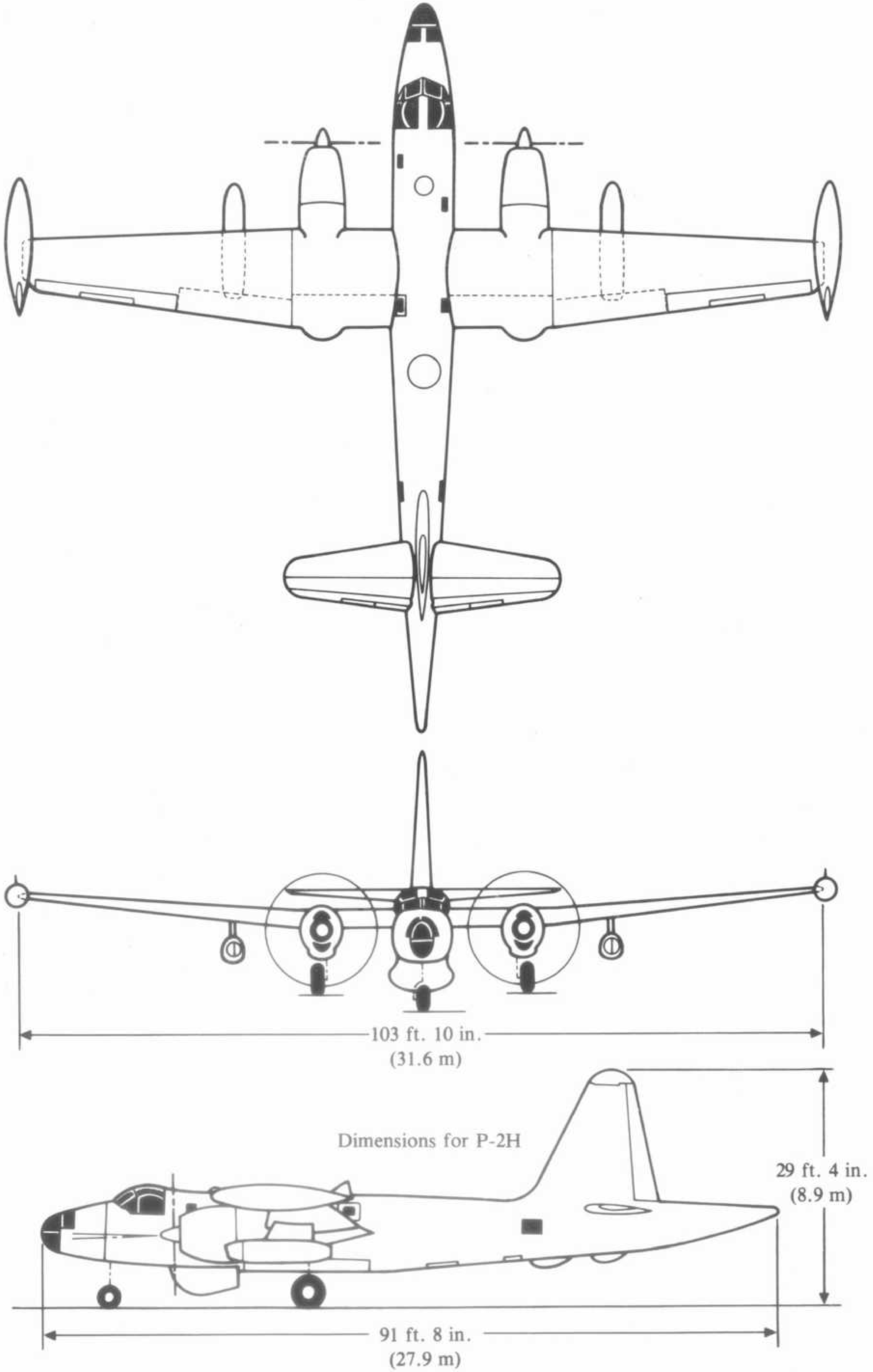
Lockheed traces its long history of producing maritime patrol aircraft to the Hudson, a converted Model 14 Super Electra. In April 1938 a British Air Ministry commission visiting several American aircraft firms sought a patrol bomber to protect shipping lanes in the event of war. Commission members were highly impressed by the quality of Lockheed's products and the enthusiasm of its employees, who already had constructed a wooden mockup of a potential bomber. The British soon ordered 175 planes plus as many more as could be delivered by December of 1939, up to a maximum of 250. It was the largest aircraft order that had ever been placed with a single United States manufacturer, and it thrust Lockheed into the top ranks as a major defense contractor.

Lockheed delivered the 250th aircraft more than seven weeks ahead of schedule. By then, World War II had erupted in Europe. The Hudson quickly distinguished itself in the conflict. A Hudson was the first plane to capture a submarine when it bombed and strafed a U-boat into submission and hovered over it until surface craft arrived. Hudsons also sank U-boats, escorted convoys, and participated in bombing sorties. The aircraft's ability to withstand heavy damage and return to home base earned it the nickname ''Old Boomerang.''

Early Hudsons carried crews of four, including a navigator-bombardier in a glazed nose and a gunner in a rear top turret. Later versions accommodated a fifth crew member. The aircraft featured two fixed .303-caliber guns in its nose and two .303-caliber guns in the rear turret; the bomb bay was rigged for 10 bombs weighing 100 pounds (48 kg) each.

Besides the Royal Air Force, Hudsons joined the air arms of Australia, Brazil, Canada, China, and New Zealand as well as the U.S. Navy and Army Air Force, where 300 served as advanced trainers under the designation AT-18-LO. Hudsons bombed Japanese forces on the Malay Peninsula and on the island of New Guinea. In the Atlantic, Hudsons were the first U.S. aircraft to sink submarines. As the war progressed, the Hudson was succeeded by the Ventura and Harpoon, maritime patrol aircraft also produced by Lockheed.

Lockheed P-2V Neptune



LOCKHEED P-2V NEPTUNE

Operational data for P-2V-5:

Cruising speed: 207 mph (330 km/h)
Maximum speed: 353 mph (570 km/h)
Empty weight: 39,900 lb. (18,100 kg)
Service ceiling: 26,000 ft. (7,920 m)
Normal range: 3,195 miles (5,140 km)
Number produced by Lockheed: 1,051

The P-2V Neptune just missed World War II action. Lockheed started design studies on Dec. 6, 1941 — the day before the attack on Pearl Harbor. Navy patrol squadrons wanted an aircraft with more range, a slower landing speed, and a greater armament load than the Hudson and its successors had.

Performance was everything engineers had dreamed. Its tall, vertical tail gave the Neptune excellent stability and improved single-engine control. It also had long-range capabilities and a heavy armament load capacity.

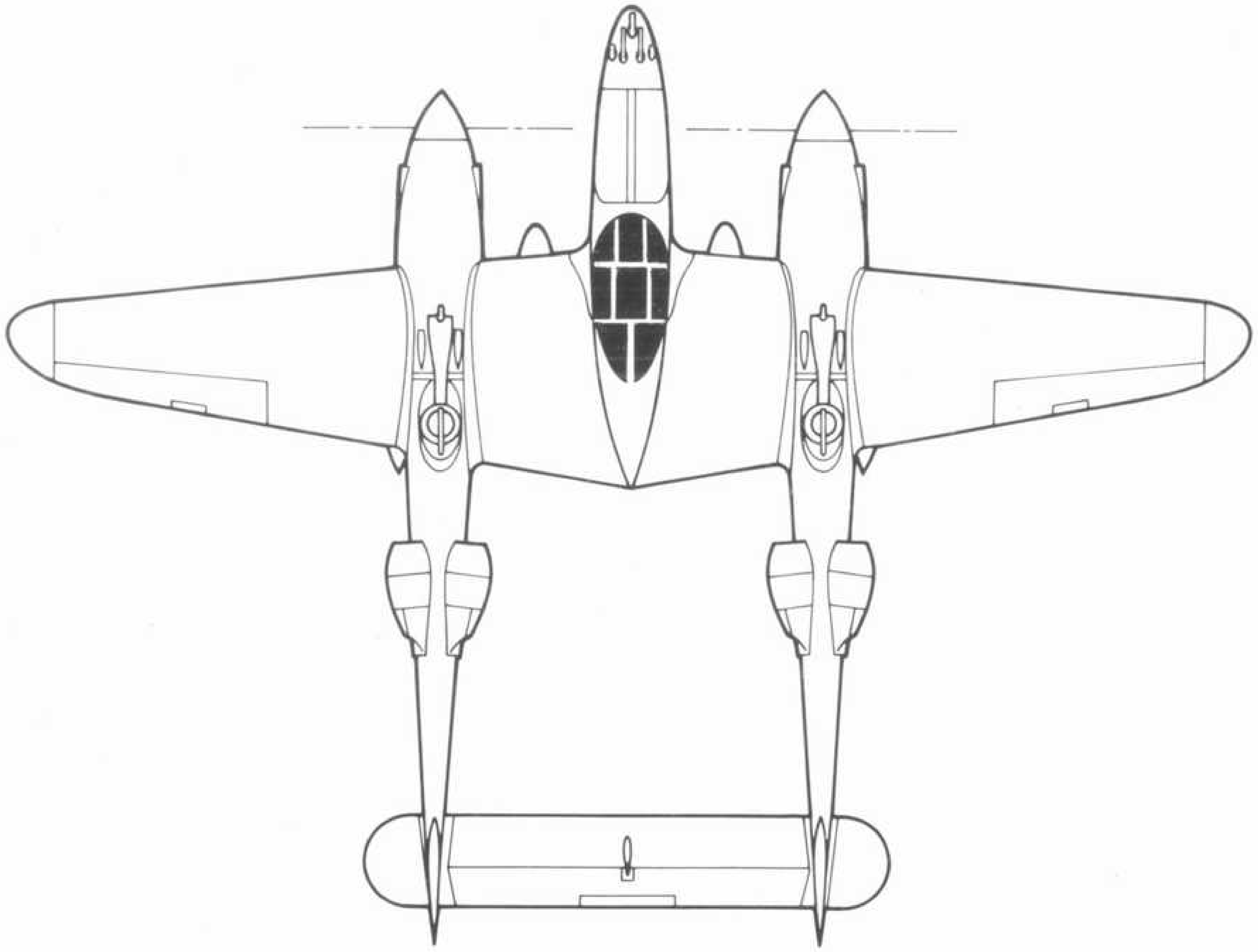
Sixteen months after the prototype's maiden flight, a Neptune entered the performance record books. In September of 1946 the third production-model P-2V took off from the runway at Perth, Australia. Fifty-five hours and 17 minutes later the ''Truculent Turtle'' landed at Columbus, Ohio. It had traveled 11,236 miles (18,082 m) and had broken the world's long-distance flight record. That record stood for 16 years.

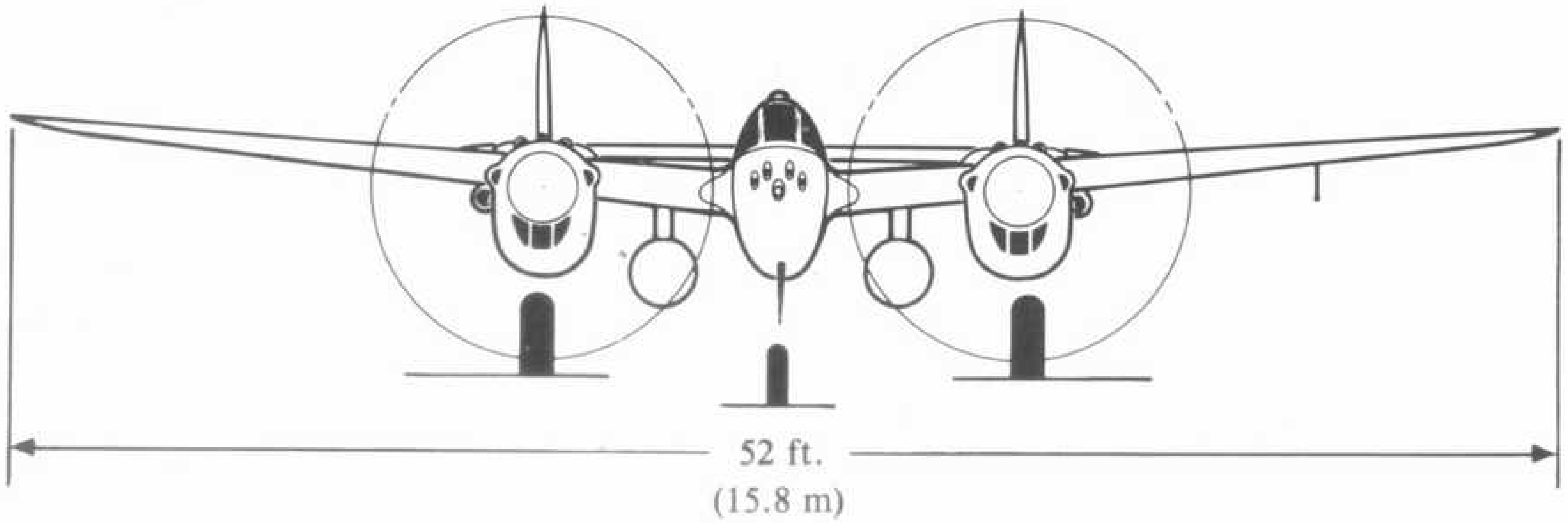
The Neptune pioneered anti-submarine warfare systems integration. Literally filled to the brim with electronics for search and detection, it could locate submerged submarines with sonobuoys dropped from its bays. It boasted a new long-range navigation system and more powerful radar. An electronic countermeasure system not only detected enemy radar but also provided a directional fix.

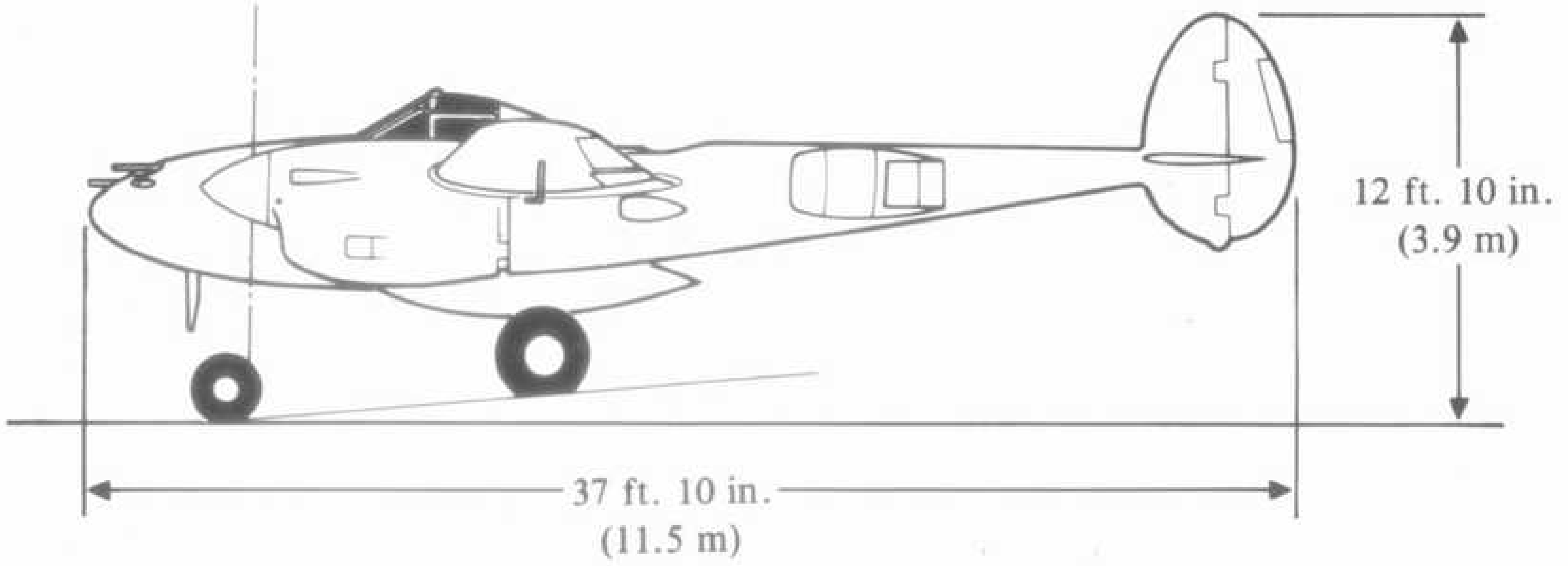
In addition to their maritime patrol duties, Neptunes handled numerous other chores. Six camera-equipped P-2s photographed 30,000 square miles (77,700 sq. km) of Alaska's wilderness for a Department of Interior survey. Two others, fitted with skis, landed at McMurdo Sound in Antarctica as part of the United States' preparations for the International Geophysical Year (1957-1958). In the Korean War P-2Vs bombed supply trains and other targets.

Through seven progressively more effective models and a record-setting 33 years of production in the United States and Japan, the P-2V's basic aerodynamic design remained the same while its weight almost doubled. In addition to the 839 flown by the U.S. Navy, Neptunes joined the military forces of 10 other nations.

Lockheed P-38 Lightning







LOCKHEED P-38 LIGHTNING

Operational data for P-38D:
Cruising speed: 300 mph (480 km/h)
Maximum speed: 390 mph (630 km/h)
Empty weight: 11,780 lb. (5,340 kg)
Service ceiling: 39,000 ft. (11,890 m)
Normal range: 500 miles (800 km)
Number produced by Lockheed: 9,924

In 1937 the Army Air Corps awarded Lockheed a contract to produce a new fighter aircraft — the P-38 Lightning. The first Lightning took its maiden flight on Jan. 27, 1939. Its top speed of more than 400 mph (640 km/h) was 100 mph (160 km/h) faster than any first-line fighter in the world.

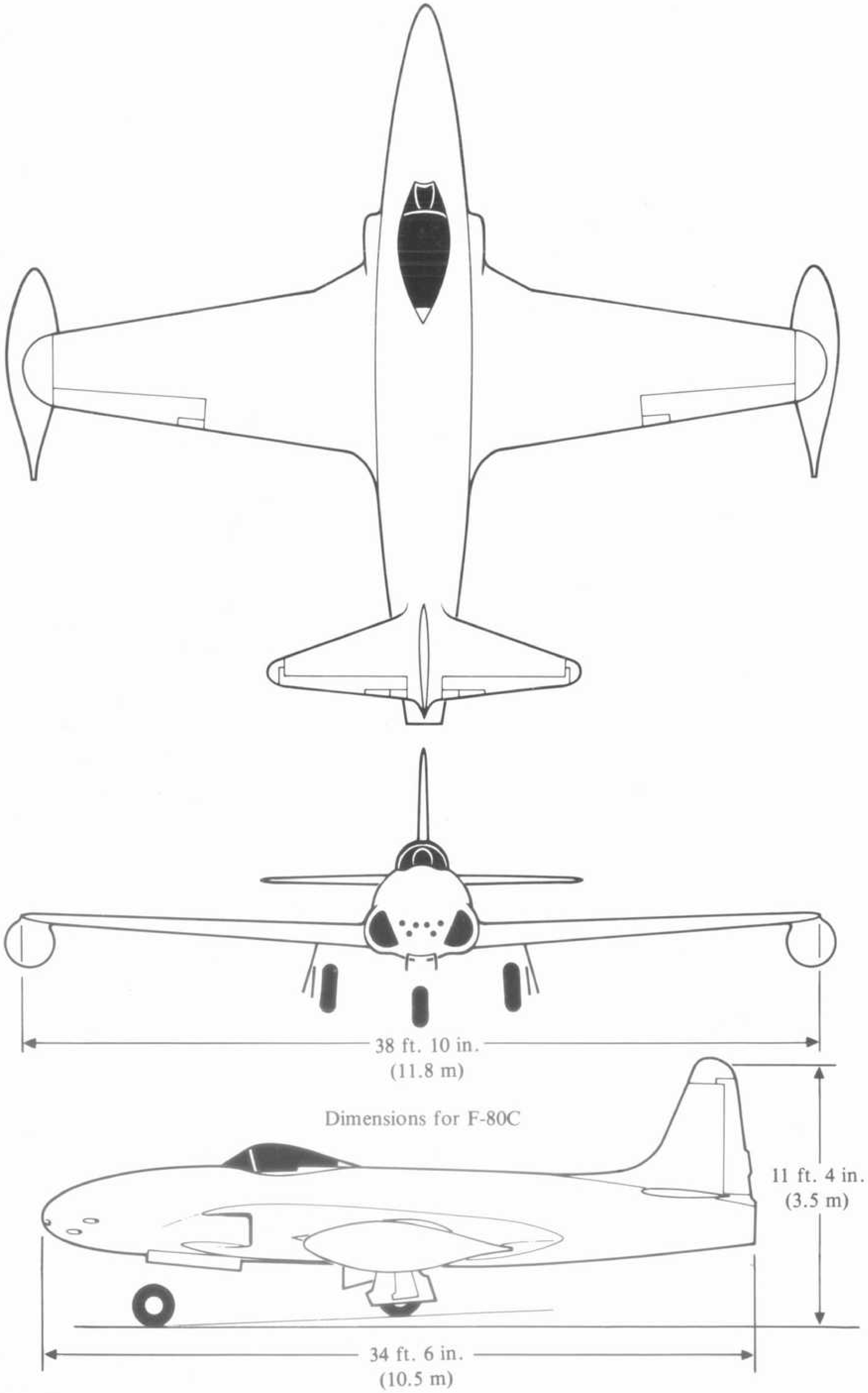
P-38 production started in earnest in September 1939, the same month war broke out in Europe. By the time hostilities ended, Lockheed and Vultee had completed 10,037 Lightnings in 18 versions. They served not only as fighters, but also as interceptors, bombers, photo reconnaissance planes, ambulances, troop carriers, and in many other workhorse jobs. Such service earned the P-38 a reputation as the most versatile combat aircraft of its day.

Two turbo-supercharged Allison engines and its unique, twin-boom design gave the Lightning an inherent ruggedness and an ability to lift heavy loads, including a bigger bomb load than that carried by the early B-17. When armed with 2,000 rounds of 50-caliber ammunition for its four machine guns and 60 rounds of 20mm cannon shells, its concentrated firepower was devastating.

Pilots flying P-38s sank destroyers and submarines. They crippled tanks and locomotives with strafing fire, blew up pillboxes with rockets and bombs, and eliminated hundreds of enemy aircraft. The first American aircraft to shoot down a Nazi plane after the United States entered the war was a P-38. In the Pacific, P-38s destroyed the aircraft carrying Admiral Yamamoto Isoroku, the architect of the Japanese bombing of Pearl Harbor. Majors Richard Bong and Thomas McGuire Jr., the top two American aces of World War II, flew P-38s exclusively. P-38s were credited with more "kills" of Japanese aircraft than any other American fighter.

During World War II a small number of Lightnings flew for China, Great Britain, Portugal, and the Free French. After the war a few P-38s were sold to Italy and Honduras. But the U.S. Air Force quickly scrapped or surplused American P-38s in favor of jet fighters, including the Lockheed P-80 Shooting Star.

Lockheed F-80 Shooting Star



LOCKHEED F-80 SHOOTING STAR

Operational data for P-80A:
Cruising speed: 410 mph (660 km/h)
Maximum speed: 558 mph (900 km/h)
Empty weight: 7,920 lb. (3,590 kg)
Service ceiling: 45,000 ft. (13,720 m)
Normal range: 780 miles (1,260 km)
Number produced by Lockheed: 1,732

In the heat of World War II, Lockheed's famed aircraft designer Kelly Johnson promised the U.S. Army Air Force that he could build a jet fighter prototype in 180 days. Johnson was better than his word for the AAF accepted the aircraft on Nov. 15, 1943, the 143rd day. But difficulties in obtaining a replacement for the original de Havilland engine, which was damaged in ground tests, delayed the first flight until Jan. 8, 1944.

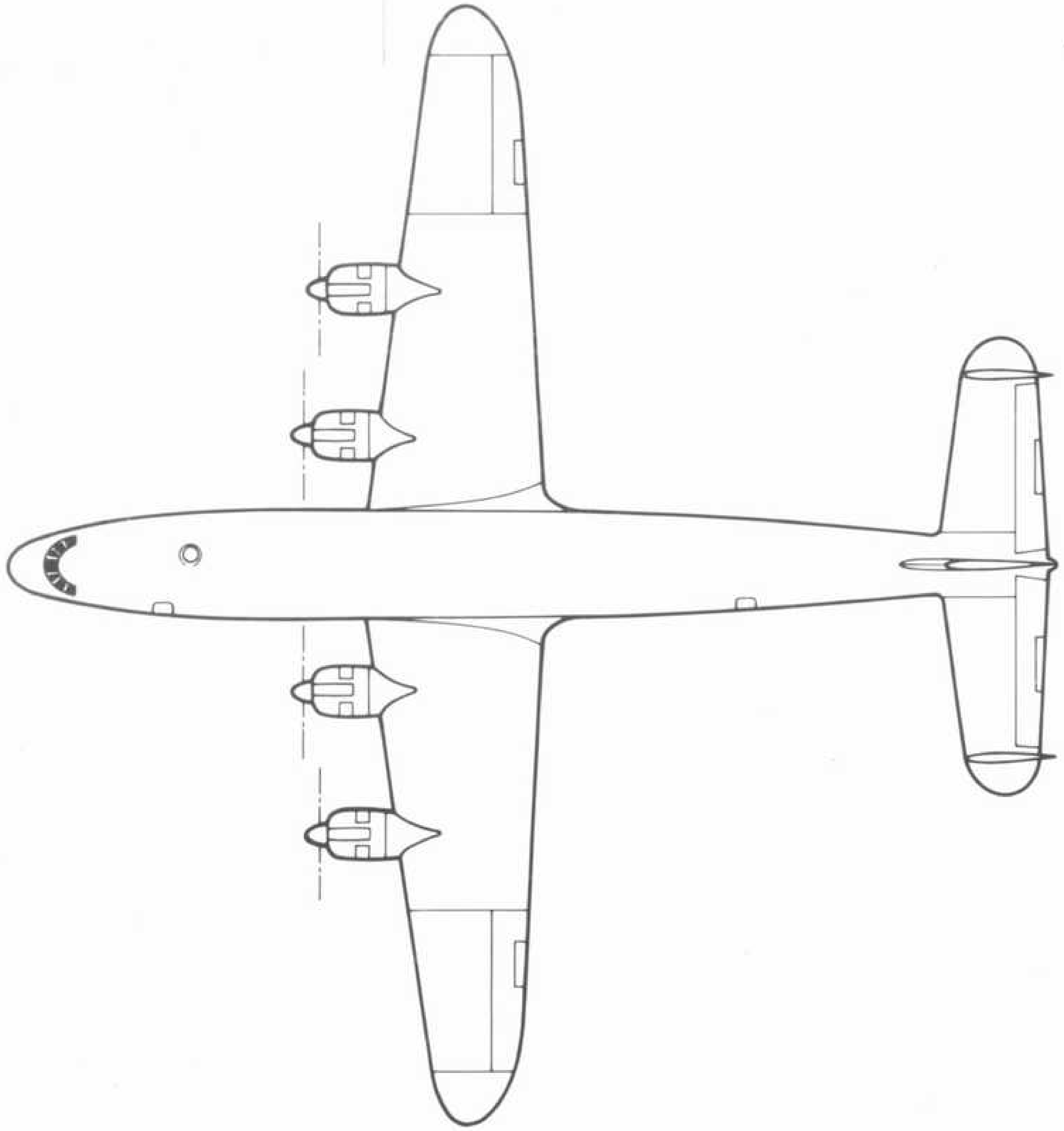
The Air Force quickly ordered mass production of the Shooting Star. When British engine suppliers could not meet the demand, General Electric stepped up with a larger and more powerful engine, which required substantial redesign of the aircraft. An XP-80A first flew on June 10, 1944, with the new engine and a larger airframe. World War II ended before production aircraft could prove themselves in battle, however.

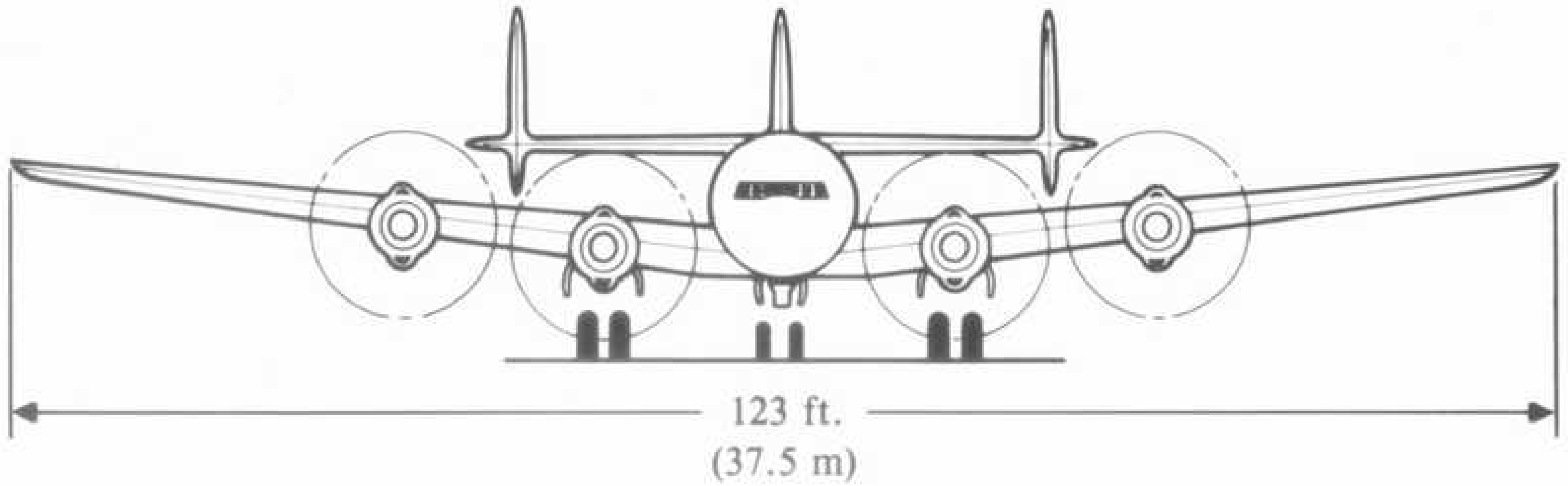
Nevertheless, the P-80 soon gained glory of another kind. In 1946 a P-80 flying east set a transcontinental speed record that lasted seven years. On June 19, 1947, Col. Albert Boyd broke the world's speed mark by flying an average of 623.738 mph (1,003 km/h) over Muroc Dry Lake in California. This was the first time in 23 years that an American aircraft had held the record. Other P-80s picked up such coveted trophies as the Bendix (twice) and the Thompson (twice) in air race competitions.

During the Korean War the P-80, redesignated the F-80, displayed its fighting prowess. As the Air Force's primary fighter, F-80s flew 26,356 sorties in the first seven months of hostilities. They shot down 94 enemy aircraft, including a MiG-15 in history's first all-jet battle.

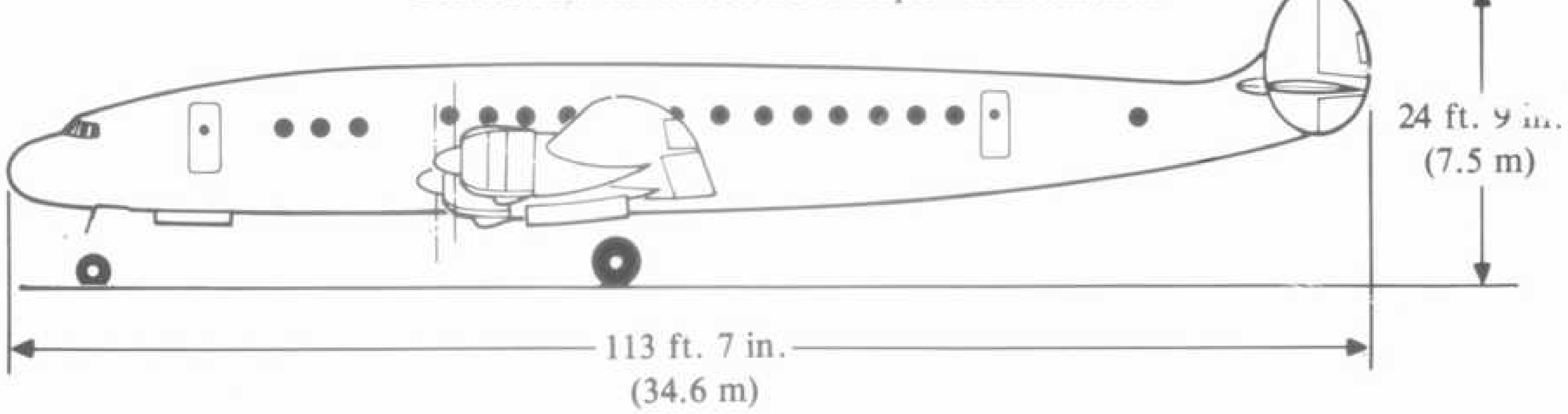
Between 1944 and 1951 Lockheed built 1,732 Shooting Stars in several versions. The company also manufactured 5,691 T-33s, a two-seat trainer version, between 1948 and 1959. Canada and Japan produced a total of 866 T-33s under license. For the U.S. Navy, Lockheed built 150 T-2V-1 SeaStars, a carrier-based version of the T-33. The SeaStars were manufactured between 1956 and 1958. Responding to an Air Force request for a two-man, all-weather fighter, Lockheed lengthened the F-80 fuselage and inserted an Allison J-33A engine with afterburner. The company produced 854 of these F-94 Starfires from 1949 to 1954.

Lockheed Constellation





Dimensions for Model 1049 Super Constellation



LOCKHEED CONSTELLATION

Operational data for Model 049:
Cruising speed: 275 mph (440 km/h)
Maximum speed: 329 mph (530 km/h)
Empty weight: 55,345 lb. (25,100 kg)
Service ceiling: 25,500 ft. (7,770 m)
Normal range: 2,290 miles (3,680 km)
Number produced by Lockheed: 856 (all models)

Lockheed's Constellation inaugurated a new generation of large, piston-engine transports designed to carry passengers long distances in pressurized, air-conditioned comfort. This graceful, triple-tailed airplane helped to introduce millions of travelers to domestic and intercontinental flight worldwide.

Conceived in 1939, the "Connie" responded to an airline request for a faster, more luxurious commercial airliner. But World War II intervened. When the aircraft first flew on Jan. 9, 1943, it was designated C-69, a transport and the first of the military versions of the aircraft. Piloting the prototype Connie, Howard Hughes set a nonstop, transcontinental record flying from Burbank to Washington, D.C.

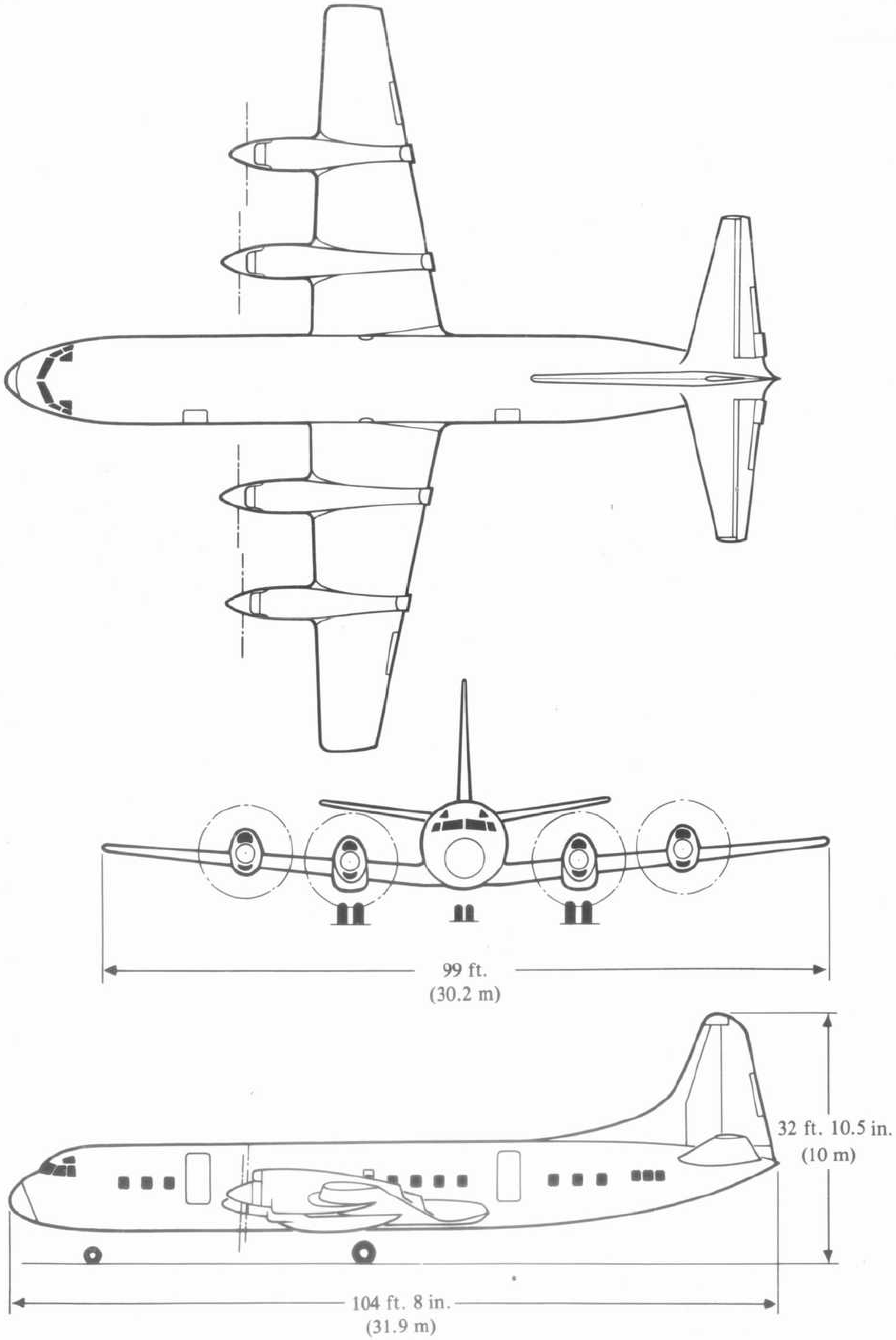
Military Connies pioneered the use of weather, ground terrain and search radar. They served almost four decades in both the Air Force and Navy. Dwight Eisenhower, first as a general and then as president, used three Air Force Connies as official aircraft. All were named "Columbine."

Lockheed constructed Constellations in various models through 1958. Each version was bigger, faster, could carry more weight, and fly farther than its predecessor. In 1945 the company converted C-69s still in production to commercial model 049s. Powered by four 2,300-horsepower Wright engines, 049s carried up to 81 passengers. The first Super Constellation (Model 1049), with a gross weight of 120,000 pounds (54,430 kg), could transport 94 persons over 5,000 miles (8,050 km). The 1649A Starliner, last of the Constellation series, answered the need for nonstop Atlantic service. It had new 3,400-horsepower turbo compound engines and an increased weight of 156,000 pounds (70,760 kg).

TWA, Eastern, Air France, KLM, and Qantas were among the numerous airlines that purchased Connies. Major airline use of this aircraft, however, virtually disappeared after the late 1960s as jetliners took over their routes. In 1982 the Navy decommissioned the last U.S. military Constellation, an NC-121K involved in mapping the Earth's magnetic field.

Lockheed L-188 Electra

LOCKHEED L-188 ELECTRA



Operational data for Model L-188A:

Cruising speed: 373 mph (600 km/h)
Maximum speed: 448 mph (720 km/h)
Empty weight: 57,400 lb. (26,040 kg)
Service ceiling: 28,400 ft. (8,660 m)
Normal range: 2,200 miles (3,540 km)
Number produced by Lockheed: 170

Specifications set forth by American Airlines in 1955 called for a short-to-medium-range aircraft that would complement the new long-range pure jets. Lockheed-California Company responded with the L-188 Electra. The new aircraft showed bright promise when it made its first flight on Dec. 6, 1957, eight weeks ahead of schedule. Following a remarkably trouble-free test program involving four aircraft, the Electra was awarded its FAA-type certificate on Aug. 22, 1958.

Comfortable, roomy and a favorite of flight crews, the Electra demonstrated superb operational performance. Powered by four Allison 501 D turboprops, the aircraft could carry 65 to 98 passengers. It could climb easily on two engines and cruise at 10,000 feet (3,050 m) on only one engine.

Deliveries to airline customers began in October 1958, but strikes by airline pilots prevented the Electra's introduction into service until the following year. Sales slowed because of an economic recession that gripped the United States. Meanwhile, the public increasingly showed a preference for pure jet transports, which entered service in late 1958. Diminishing sales of the Electra led Lockheed to terminate production of the airline version in 1960.

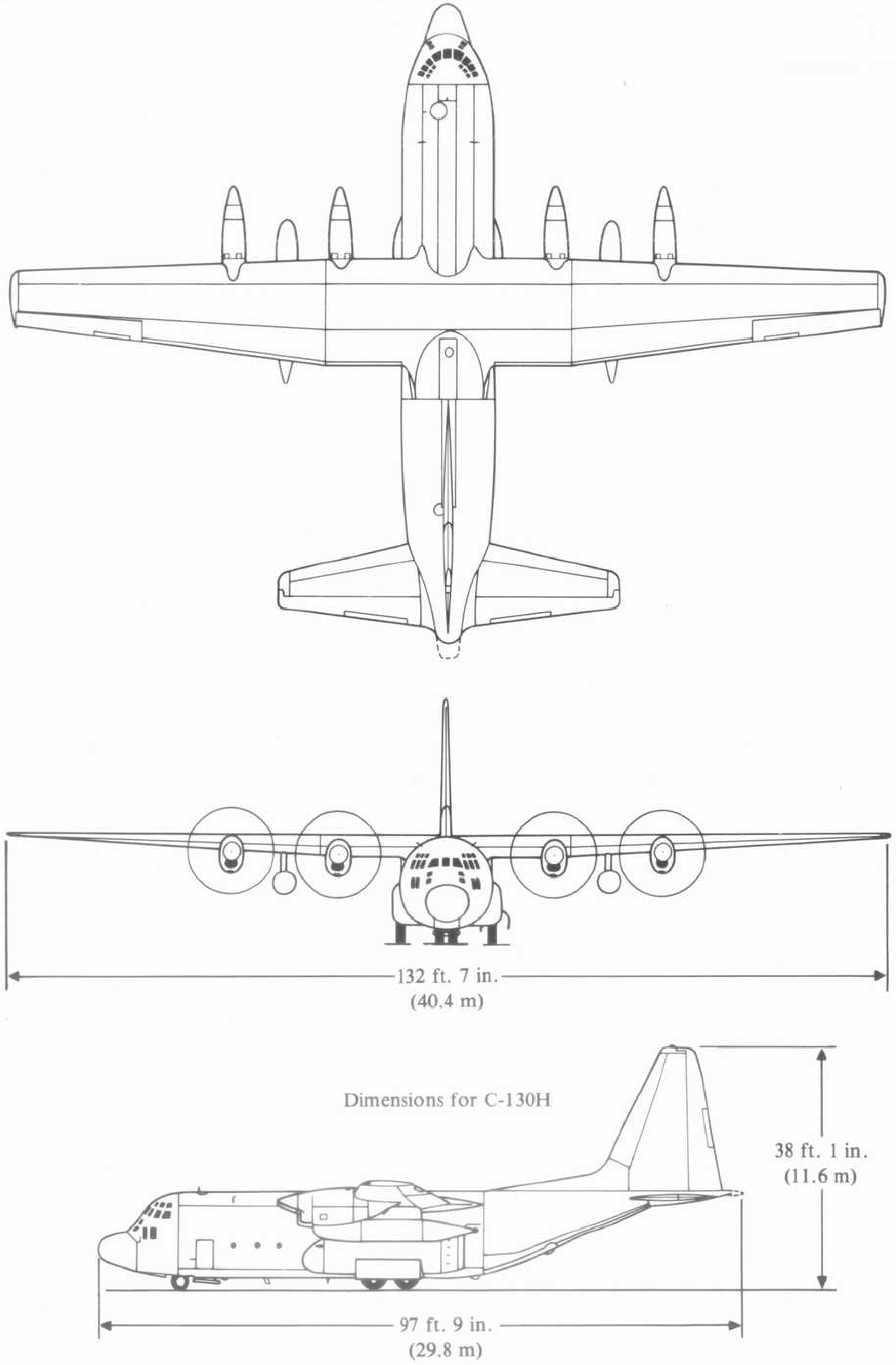
The U.S. Navy, however, selected the Electra as the basis for its new maritime patrol aircraft. Lockheed delivered the first P3V-1, as it was designated, in October 1960. This airplane evolved into today's P-3 Orion, which remains in production.

Electras have flown the liveries of more than 130 carriers, including such major airlines as Cathay Pacific, Eastern, KLM, National, Northwest, PSA, Qantas, and Western. Partly as a result of a cargo conversion developed by Lockheed Aircraft Service Company, Electras found a ready and eager market of second-hand buyers. Electras also have been employed as charter carriers and as engine testbeds. The Navy outfitted one L-188 with external radomes to track missiles.

Lockheed C-130 Hercules

LOCKHEED C-130 HERCULES

Operational data for C-130H:
Cruising speed: 345 mph (560 km/h)
Maximum speed: 385 mph (620 km/h)
Empty weight: 77,000 lb. (34,930 kg)
Service ceiling: 42,000 ft. (12,800 m)
Normal range: 5,300 miles (8,530 km)
Number produced by Lockheed: 1,700 plus



Dimensions for C-130H

In service with the military forces of more than 55 nations, the Lockheed C-130 Hercules is constructed in more than 40 versions. Air carriers in 25 countries fly the civil versions, the L-100-20 and -30. Lockheed assembled the first two Hercules prototypes in Burbank, Calif., but all production models have been built by Lockheed-Georgia's facilities in Marietta since the mid-1950s.

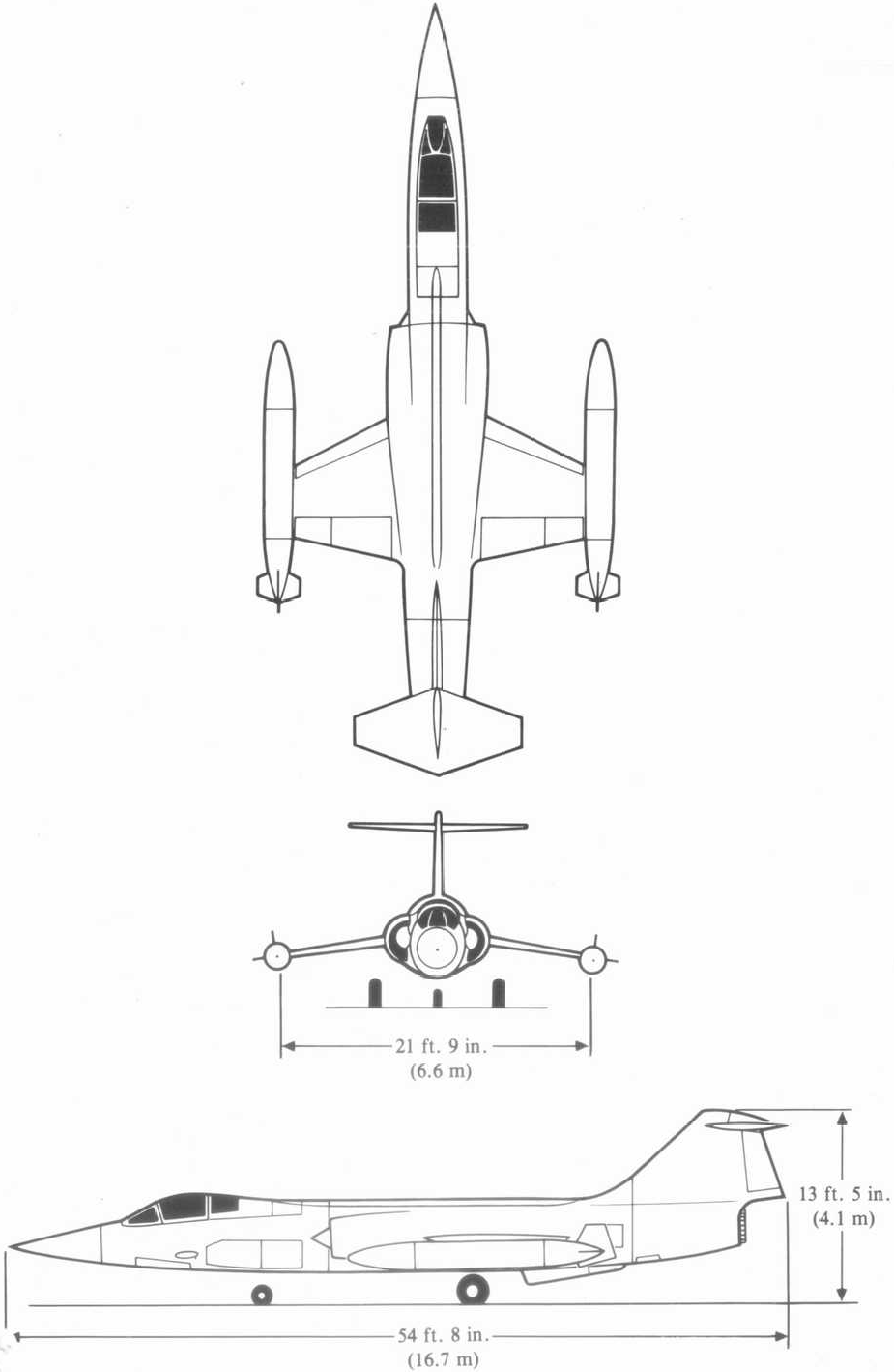
The C-130 can transport 92 combat troops, airdrop 64 fully equipped paratroops, or carry 74 litter patients during aeromedical evacuation missions. Its cargo section measures 40 feet by 10 feet by 9 feet (12.2 m by 3 m by 2.7 m). With its integral ramp and rear door operating in flight, it has paradropped a single pallet of cargo weighing 43,200 pounds (19,600 kg).

In going from the original "A" model to the current "H," Lockheed engineers have achieved great improvements in the airplane's maximum payload, engine power, range, take-off weight, airfield performance, and maintainability. Up-to-date avionics have enhanced mission capabilities, also. The airplane's latest enhancements include the installation of improved crew seats, a new flush-mounted HF antenna, and additional emergency exits.

The C-130 is the largest aircraft ever to land on, or take off from, an aircraft carrier without using a tailhook arrest in landing or catapult assistance in takeoff. It is the largest plane ever to operate from the skiway at the South Pole, and it is the largest aircraft equipped with ski-and-wheels. It has set a low-altitude extraction record by dropping 25 tons (22.7 t) of cargo while skimming just 10 feet (3 m) above the ground.

Versatile and rugged, C-130 Hercules refuel helicopters and fighter planes, photo-map areas of the world, hunt icebergs and hurricanes, fight forest fires, serve as airborne command posts, and can make suface-to-air pickups of downed airmen or astronauts. The C-130/L-100 has aided famine victims in Ethiopia, earthquake victims in Peru, and victims of typhoons in Japan. Too, Hercules have supported construction of the Alaskan oil pipeline.

Lockheed F-104 Starfighter



LOCKHEED F-104 STARFIGHTER

Operational data for F-104A:

Cruising speed: 519 mph (840 km/h)
Maximum speed: 1,037 mph (1,670 km/h)
Empty weight: 13,384 lb. (6,070 kg)
Service ceiling: 64,795 ft. (19,750 m)
Normal range: 730 miles (1,170 km)
Number produced by Lockheed: 741

Prompted by U.S. Air Force experience in Korea and created by Kelly Johnson's famed "Skunk Works" design group, the Lockheed F-104 Starfighter became the Western allies' answer to the high performance Russian MiG series. Aviation experts considered the aircraft to be five-to-10 years ahead of its time. Pilots called the F-104 "the missile with a man in it" — an appropriate description for the world's first double-sonic production jet.

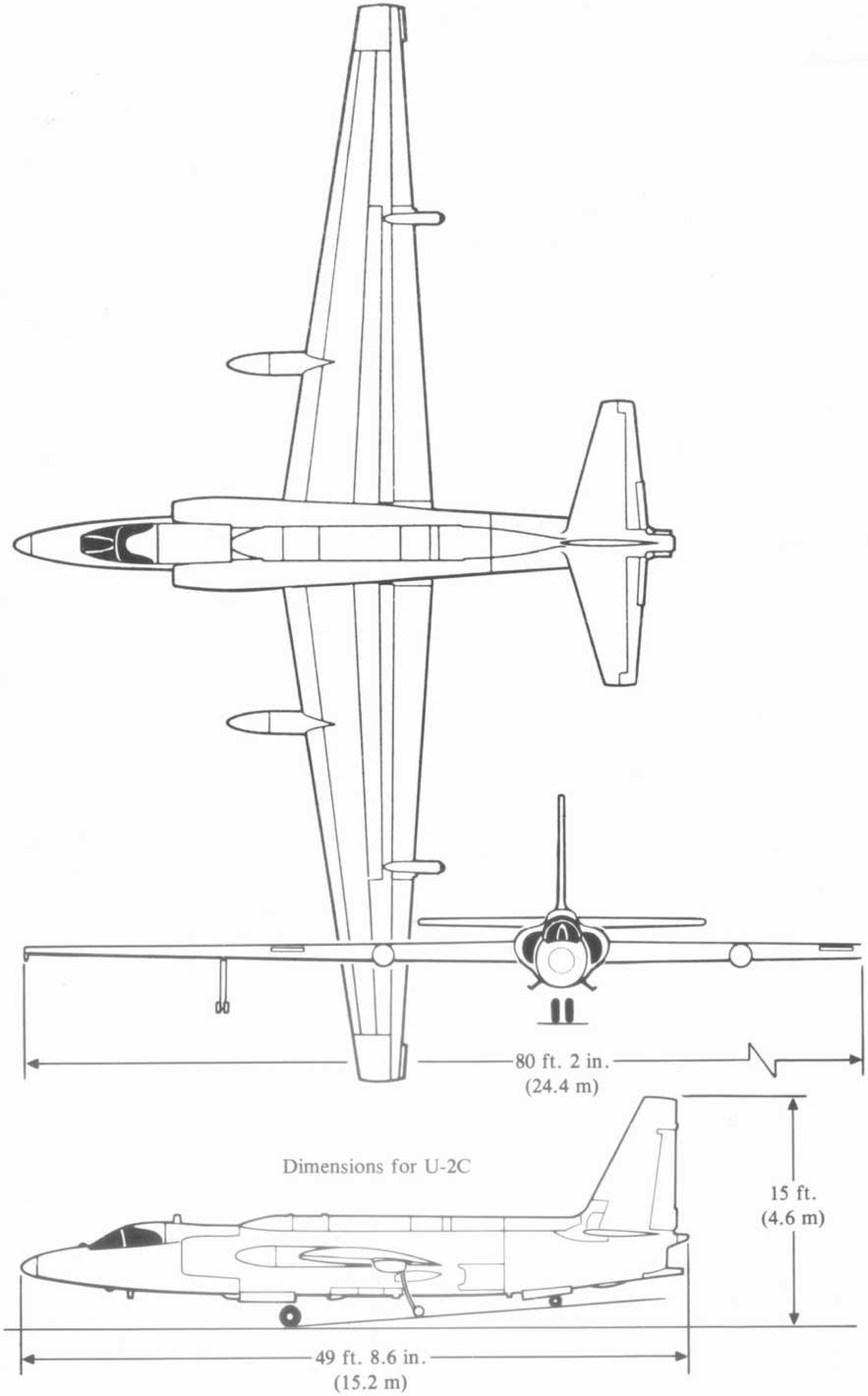
The first prototype, the XF-104 (pictured), rolled out of Lockheed-California Company's Burbank factory in 1953. In 1958, its first year of service with the USAF, the F-104 rewrote the performance record books for speed, altitude, and time-to-climb. The aircraft also generated the greatest international cooperative venture in the history of the aerospace business. Its development coincided with the need of the air forces of Belgium, Italy, the Netherlands, and West Germany for a new NATO weapons system to fulfill their European defense role.

The Starfighter's spectacular performance ultimately led to licensed production agreements with the above four European nations and with Canada and Japan. Total worldwide production of the F-104 exceeded 2,500. Italy, the last country to manufacture the aircraft, completed the final Starfighter in 1980.

Although conceived as an air-superiority fighter, F-104s underwent frequent modifications to handle various missions. Budding astronauts trained on three NF-104s outfitted with Rocketdyne AR-2 auxiliary rocket engines above their tail pipes during the early days of the U.S. space program. Lockheed built numerous trainer versions as well as Starfighters equipped to perform photographic reconnaissance and tactical strike roles. Among the aircraft's weaponry were Sidewinder missiles and the 20mm Vulcan cannon.

At given periods over two decades, the F-104 has been the principal fighter aircraft flown by 15 different nations. The USAF kept the F-104 in its inventory until January 1974.

Lockheed U-2



Dimensions for U-2C

LOCKHEED U-2

Operational data for NASA U-2C:
Cruising speed: 460 mph (740 km/h)
Maximum speed: classified
Empty weight: 13,000 lb. (5,900 kg)
Service ceiling: 70,000 ft. (21,340 m)
Normal range: 2,880 miles (4,630 km)
Number produced by Lockheed: classified

During the Cold War of the early 1950s the United States government sought an aircraft to monitor activities in the Soviet Union. It had to cruise high enough to be immune to interceptors. Lockheed's Kelly Johnson, head of the company's Advanced Development Projects, submitted an unsolicited proposal for review. He promised delivery of a prototype in eight months. Maiden flight of the first aircraft originated in August 1955 from a secluded dry lake bed in Nevada.

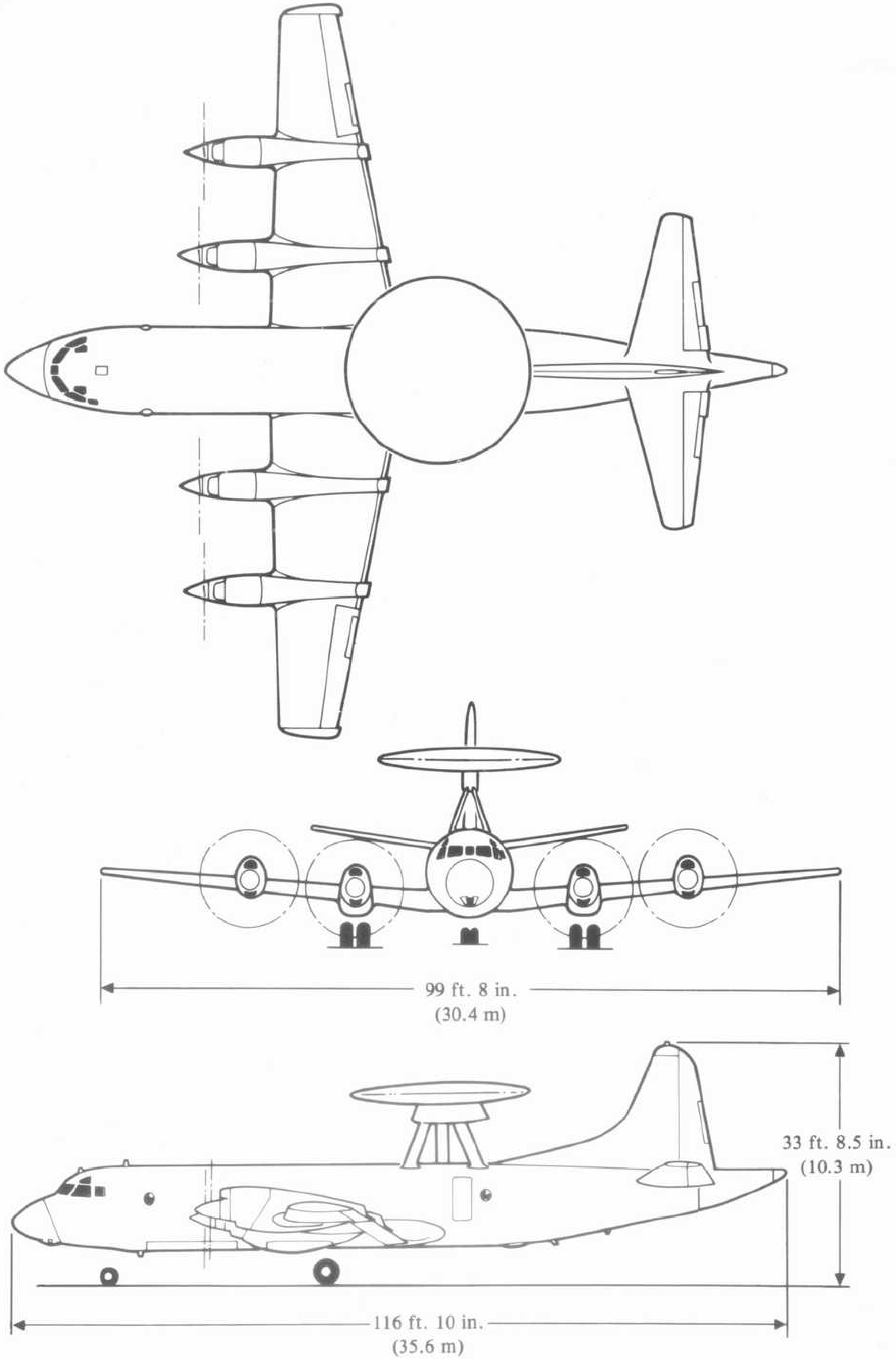
To disguise its reconnaissance role, the new aircraft was designated U-2, the "U" standing for "utility." The design stressed economy. A pressurized cabin would add too many pounds to the airframe, so the lone pilot was sheathed in a pressurized suit. Thin, glider-like wings and bicycle-type landing gear also cut the aircraft's weight. The weight savings allowed the aircraft to be crammed with sophisticated cameras, film, and electronic monitoring devices.

At altitudes of 70,000 feet (21,340 m), U-2s began overflights of communist territory in 1956. On May 1, 1960, a surface-to-air missile brought one down, effectively ending U-2 missions over the Soviet Union. In the summer and fall of 1962, U-2s flying over Cuba brought back photographic proof of Soviet missile installations on that island. Later, U-2s returned with pictures showing the dismantling of these installations as the Cuban Missile Crisis receded. In Asia, U-2s tracked activities of communist forces during the Vietnamese War.

Today, two of the aircraft, flown by NASA's High-Altitude Research Projects at Moffett Field, Calif., perform numerous Earth resources experiments. U-2s tracked the fallout from the Mount St. Helens eruption and have provided scientists with information on the creation of the universe. As part of the 9th Strategic Reconnaissance Wing at Beale AFB, Calif., U-2Rs still fly intelligence-gathering missions.

Production of the original U-2 family ended in the late 1960s. Beginning in 1981, however, Lockheed-California Company started delivery to the Air Force of a new version, the TR-1, a tactical reconnaissance aircraft based on the U-2R airframe, which is 40 percent larger than the original U-2. They remain the world's highest-flying, single-engine jet aircraft.

Lockheed P-3 AEW&C



LOCKHEED P-3 AEW&C

Cruising speed: 345 mph (560 km/h)
Maximum speed: 397 mph (640 km/h)
Empty weight: 68,555 lb. (31,100 kg)
Service ceiling: 30,000 ft. (9,140 m)
Normal range: 4,833 miles (7,780 km)

Lockheed-California Company's airborne early warning and control (AEW&C) version of the P-3 Orion patrol aircraft can detect and track enemy air and surface traffic and direct the response of friendly counterforces. It combines a proven airframe with a proven radar system. Lockheed is proposing the aircraft to such customers as Australia, Canada, Japan, the U.S. Navy, and the U.S. Customs Service.

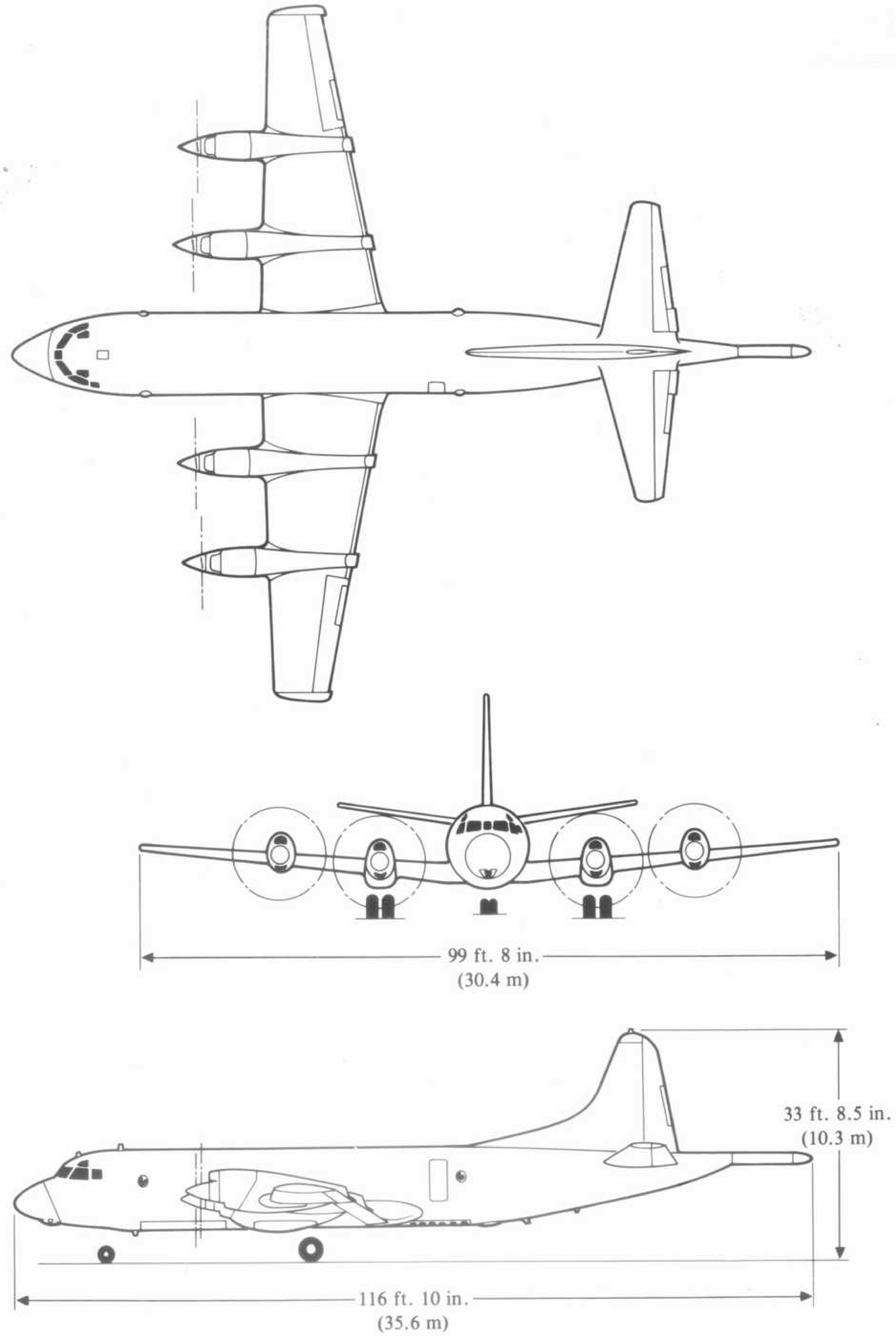
The P-3 AEW&C houses General Electric's APS-138 radar in a rotodome, which is 24 feet (7.3 m) in diameter. It offers a radius of action and time on station greater than any other existing patrol airplane. With its efficient turboprop engines, fuel costs and consumption also are significantly lower.

The P-3 AEW&C's advanced processor provides both increased memory and faster data flow than current on-board computers. Tactical crew stations control air defense and surveillance missions. Operators view primary display data on 19-inch (48-cm) vertical screens. A 1553A data buss allows distribution of all information to any display station within the aircraft. These interactive, computer-generated displays enable operators to detect, track and identify targets, evaluate threats, assign weapons, and control friendly fighter traffic and communications.

A new high frequency radio hooked to a helicoil antenna located on a probe aft of the fuselage provides the same effective radiated power as the traditional long-wire antenna but with much less maintenance. For satellite communications, an ARC-187 radio transmits and receives communications in standard military language. An AYK-14 communications processor controls transmissions and coordinates the ''look angle'' of the antennas toward the satellites.

An early pioneer in this area, Lockheed was instrumental in original AEW developments during the late 1940s and the 1950s with versions of its P-2V Neptune patrol aircraft and Constellation transport. A WV-23 model of the Connie in 1956 became the first rotodome-equipped aircraft.

Lockheed P-3 Orion



LOCKHEED P-3 ORION

Operational data for P-3C:

Cruising speed: 378 mph (610 km/h)
Maximum speed: 473 mph (760 km/h)
Empty weight: 61,491 lb. (27,890 kg)
Service ceiling: 28,300 ft. (8,630 m)
Normal range: 4,765 miles (7,670 km)
Number produced by Lockheed: 600 plus

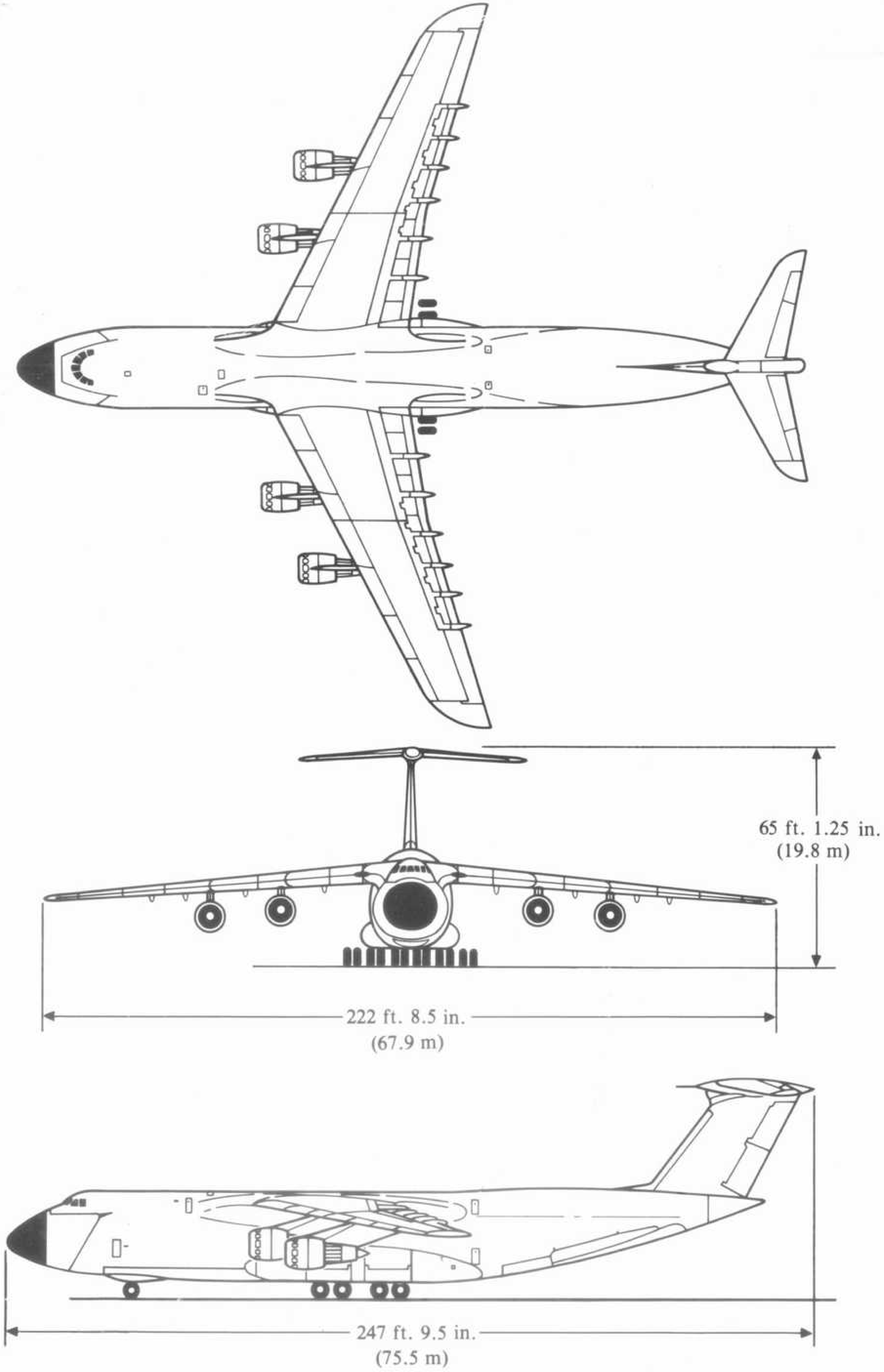
Detect, track, and destroy enemy submarines — that's the primary mission of the U.S. Navy's land-based anti-submarine warfare (ASW) patrol squadrons. Lockheed has furnished the Navy with its primary ASW aircraft for more than 40 years, beginning with the Hudson and continuing today with the P-3C Orion. Maritime patrol experts praise the Orion for its superb combination of range, fuel efficiency, time on station, and avionics.

Lockheed-California Company developed the Orion by modifying the L-188 Electra commercial transport design. The Navy introduced the original P-3A to its patrol squadrons beginning in 1962. The P-3B incorporated more advanced detection equipment in 1965. With its A-NEW avionics system, the P-3C revolutionized ASW surveillance in 1970. In 1975 a program called P-3C Update further enhanced the aircraft's avionics and software systems. The Update II program followed in 1977. Its features included an infrared detection system and the Harpoon anti-ship missile.

Latest and most effective airplane in the Orion series is the P-3C Update III, which joined the Navy in 1984. Included in the Update III package are a sonobuoy antenna system, a sonobuoy receiver system, and a sonobuoy signal testing device. An IBM Proteus acoustic analyzer combines increased processing capability with greater sensitivity, and it will accept new sonobuoy systems as they are developed. In addition to being installed on new P-3C's, the Update III package also could be retrofitted on as many as 226 P-3C's in the Navy's fleet. Lockheed and the Navy plan further advancements for an Update IV version.

The P-3 is the world's most widely used ASW airframe. Ten nations, including Australia, Japan, Norway, and the Netherlands, fly the aircraft. Eighteen Canadian CP-140s, which have the P-3 airframe and engines but the interior avionics of a Lockheed S-3A Viking, patrol Canada's coastline.

Lockheed C-5 Galaxy



LOCKHEED C-5 GALAXY

Operational data for C-5A:
Cruising speed: 506 mph (810 km/h)
Maximum speed: 564 mph (910 km/h)
Empty weight: 321,000 lb. (145,610 kg)
Service ceiling: 47,700 ft. (14,540 m)
Payload range: 3,450 miles (5,550 km)
Number produced by Lockheed: 81 C-5A's, C-5B in production

The Lockheed C-5 Galaxy is the largest aircraft produced outside the Soviet Union. It can deliver completely equipped combat units, support forces, and all types of supplies, including outsize cargo, to virtually any location in the world.

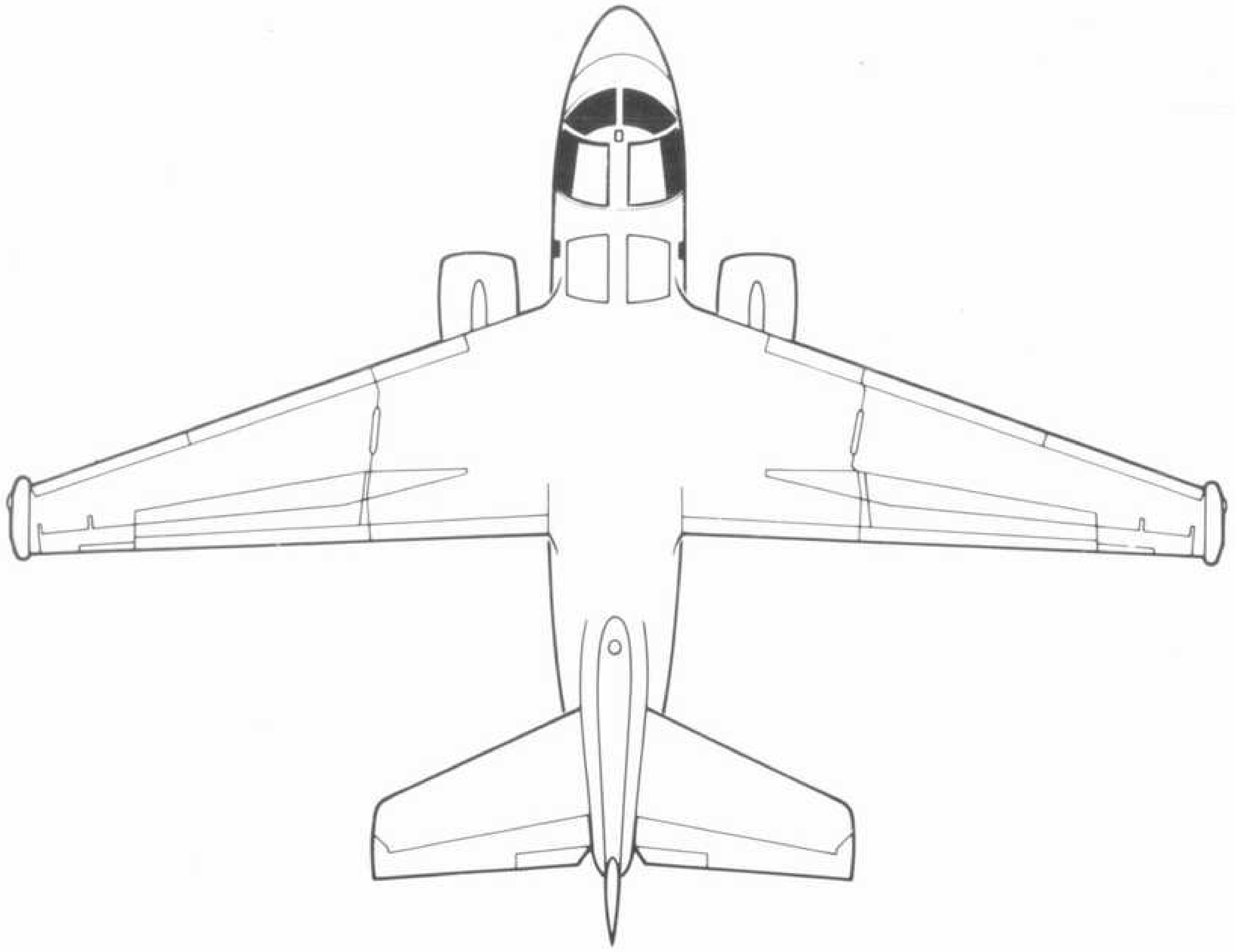
Between 1965, when Lockheed-Georgia Company received a U.S. Air Force contract to build the aircraft, and 1973, Lockheed produced 81 C-5A Galaxies. On December 31, 1982, Lockheed-Georgia and the Air Force signed another contract, which inaugurated production on 50 C-5B Galaxies. Major subassemblies for these new aircraft are being constructed at the Lockheed-California Company in Palmdale, Calif.

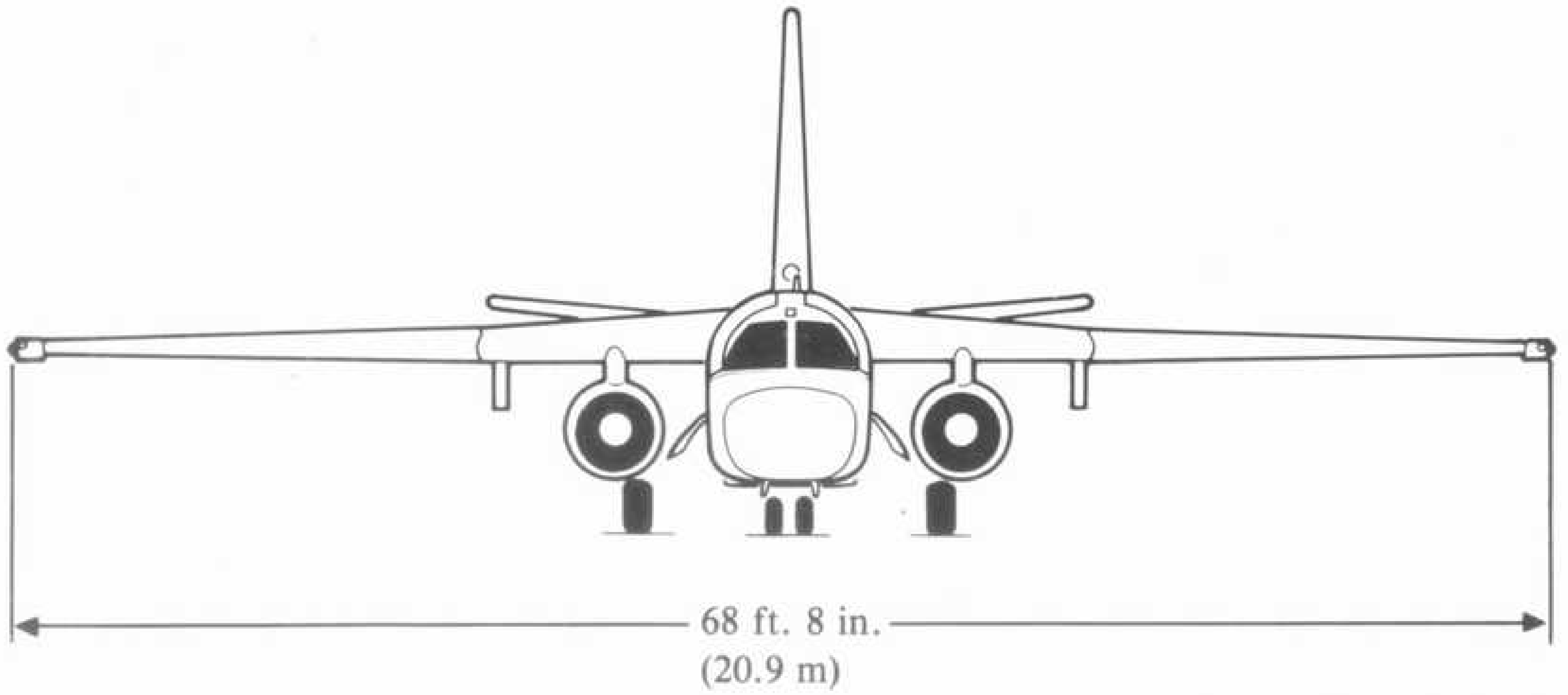
The C-5B is an updated version of the C-5A. It incorporates an improved wing now being retrofitted on the C-5A fleet, improved General Electric TF-39 engines, tougher aluminum alloys, state-of-the-art avionics, and selective material and fastener system changes to improve fracture toughness and corrosion resistance. Dimensions of the C-5B are the same as the C-5A. An aerial refueling system gives them virtually unlimited range.

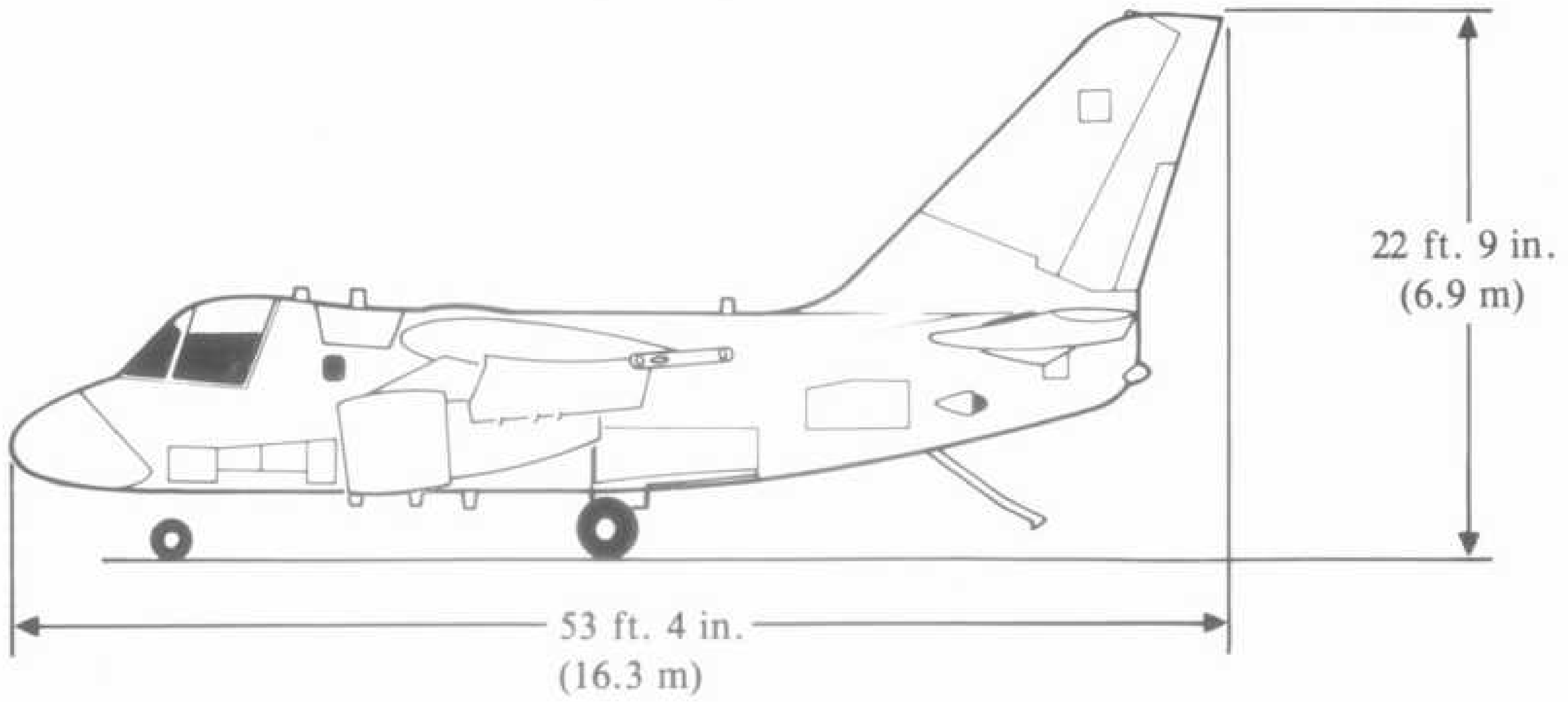
Loading and unloading of the C-5 is quick and efficient with a visor nose opening and aft doors, a "kneeling" landing gear system to lower the aircraft to truck-bed height, and drive-on ramps at each end for loading double rows of vehicles. The C-5's upper deck compartment has 73 seats for drivers and equipment operators. At destination, company personnel can drive the vehicles off the plane.

With a cargo hold 19 feet (5.8 m) wide, 13.5 feet (4 m) high, and 144.6 feet (44 m) long, the C-5 can airlift 82 tons (74 t) for 5,000 miles (8,050 km). The C-5 has flown such outsize items as two M-1 main battle tanks, which cannot be transported in any other aircraft now in service. In 1974 a C-5 airdropped a 43-ton (39-t) Minuteman intercontinental ballistic missile in a demonstration of the aircraft's capabilities.

Lockheed S-3 Viking







LOCKHEED S-3 VIKING

Cruising speed: 403 mph (650 km/h)
Maximum speed: 518 mph (830 km/h)
Empty weight: 26,650 lb. (12,090 kg)
Service ceiling: 35,000 ft. (10,670 m)
Normal range: 2,000 miles (3,220 km)
Number produced by Lockheed: 187

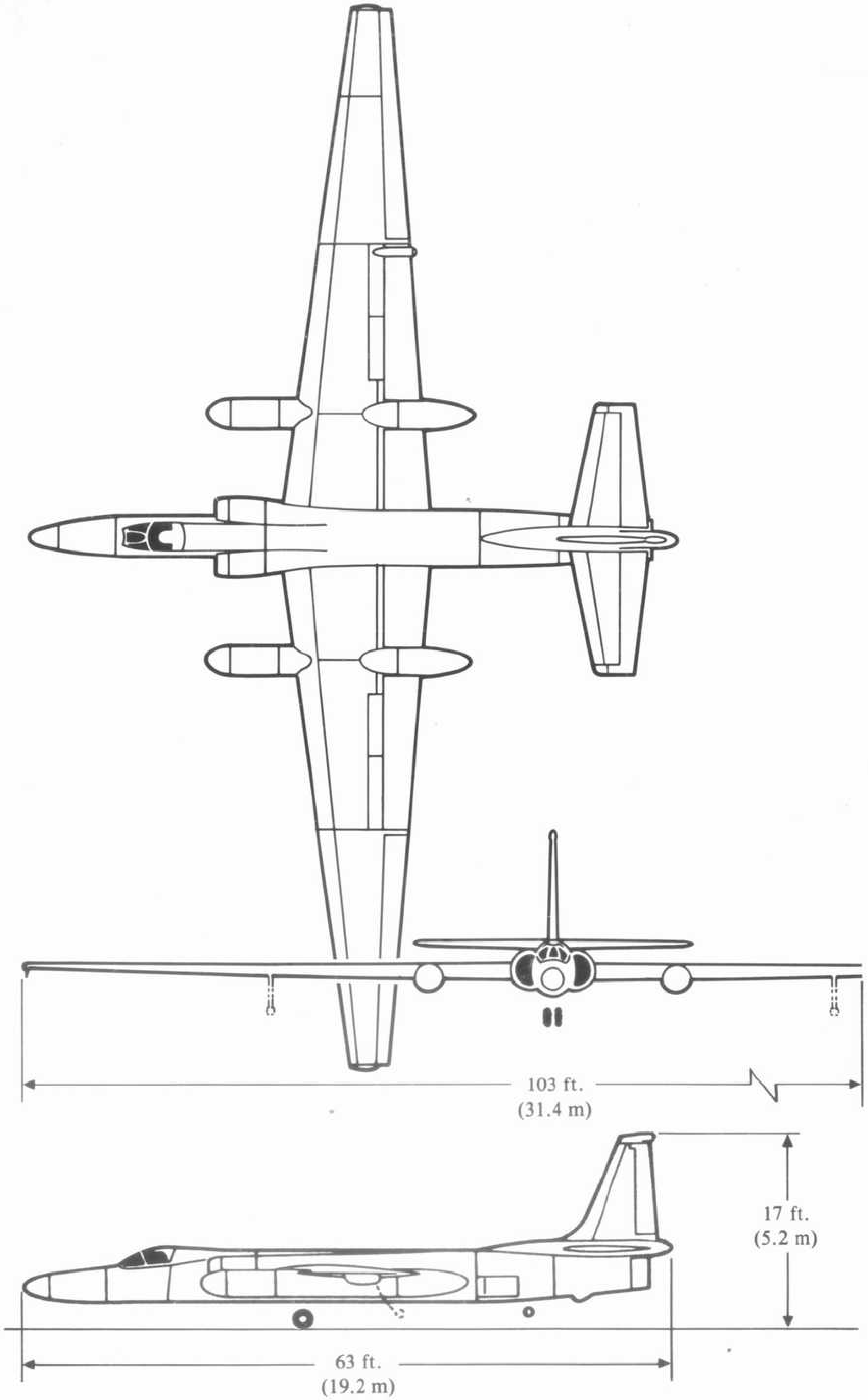
Named after the Scandinavian seafarers, the S-3 Viking has been designed from the ground up for carrier suitability and anti-submarine mission effectiveness. The Lockheed-California Company originally produced the aircraft between 1972 and 1978. It first joined the U.S. Navy carrier fleet in 1974. Along with the P-3 Orion, the S-3 has continued Lockheed's role as the sole supplier of fixed-wing anti-submarine warfare (ASW) aircraft to the U.S. Navy for more than 40 years.

The S-3A combines optimum performance, endurance, maintainability and economy. Its two high by-pass General Electric TF-34-400A turbofan engines provide more than 9,000 pounds (40 kN) of thrust. Two 300-gallon (1,140 L) drop tanks can supplement the S-3's standard fuel capacity of 1,900 gallons (7,190 L). In addition, refueling through a retractable in-flight probe can keep the S-3 airborne beyond its normal mission time of six-to-eight hours.

At the heart of the S-3's weapon system is a general purpose digital computer. It processes tactical data, identifies and classifies acoustic contacts, calculates weapon trajectories, and performs other functions that provide the four-man crew with greater capabilities in the detection, localization and identification of submarines. A magnetic anomaly detector housed in a retractable tailboom and 60 sonobuoys that can be dropped from the S-3's belly constantly supply the computer with information. If conditions warrant, an S-3A can knock out a target with depth bombs, torpedoes, and other weapons.

In 1984 Lockheed modified two S-3As into an operationally enhanced "B" version. Designed to improve the aircraft's ASW role and to add an anti-surface unit warfare capability, the modification includes enhanced radar, a new sonobuoy receiver system, an electronic countermeasures system, and the Harpoon missile aircraft command and launch control system. The Navy eventually could approve fleet modification of as many as 160 aircraft to the "B" version.

Lockheed TR-1



LOCKHEED TR-1

Operational data for NASA ER-2:
Cruising speed: 470 mph (760 km/h)
Maximum speed: classified
Empty weight: 19,000 lb. (8,620 kg)
Service ceiling: 70,000 ft. (21,340 m)
Normal range: 3,455 miles (5,560 km)
Number produced by Lockheed: currently in production

For the first time in history, the U.S. Air Force ordered an out-of-production airframe back into production when it let a contract in 1979 to Lockheed-California Company for the TR-1. The aircraft is a version of the U-2R, assembly of which was discontinued in 1968. Both the TR-1 and the U-2R are approximately 40 percent larger than the original U-2 designed by Kelly Johnson.

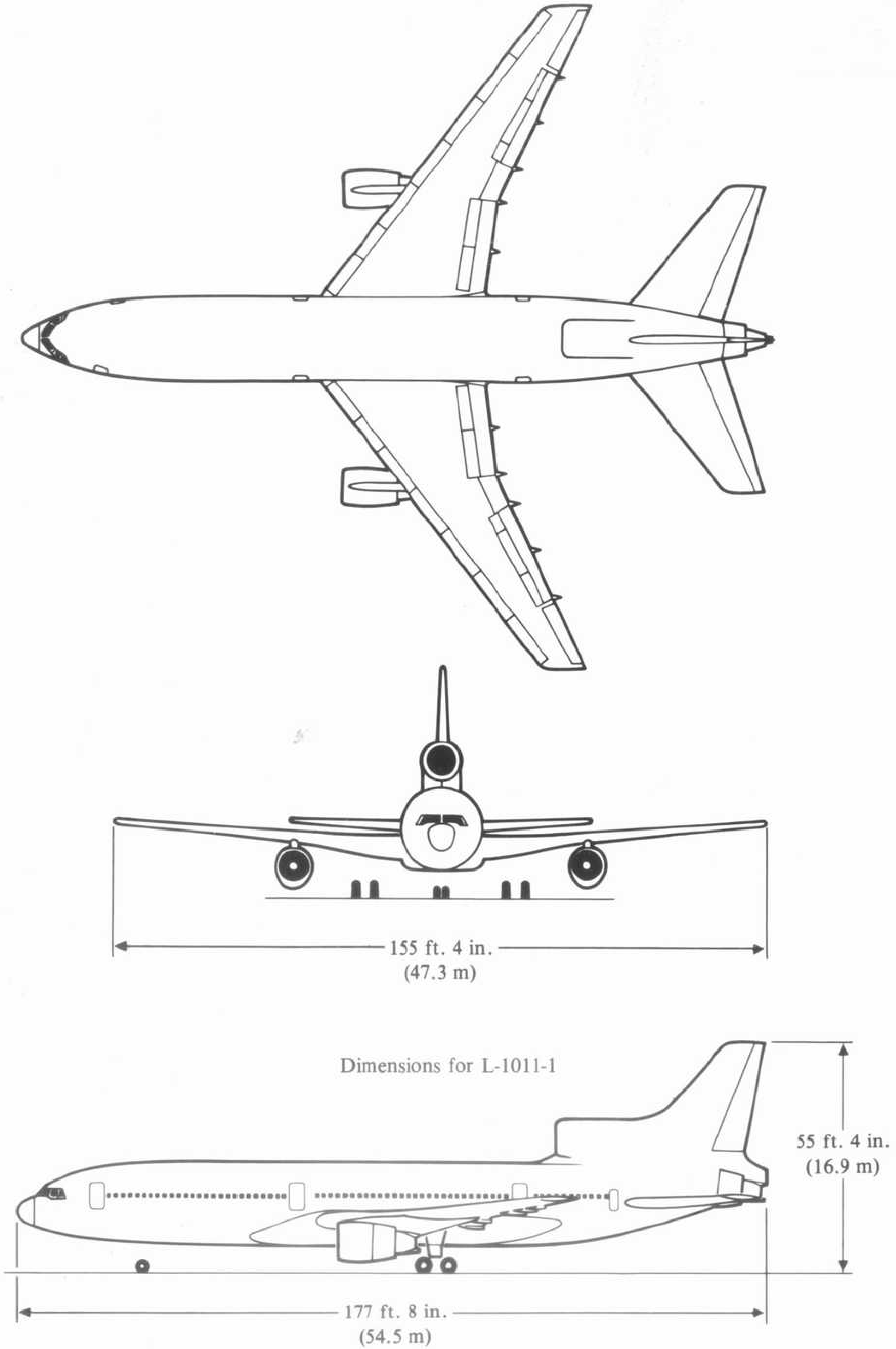
Powered by a single Pratt & Whitney J75-P-13B turbojet engine, the TR-1 is constructed mostly of aluminum, making it relatively easy to maintain. Lockheed engineers have designed the TR-1 to be equipped with interchangeable noses, mission bay hatches, and instrument wing pods so it may carry nearly 2 tons (1.8 t) of sensors and experiments. A TR-1 pilot wears a pressure suit in a cockpit containing a food warmer with space-type food tubes; HF, UHF, and VHF communication radios; and navigation aids, including tactical air navigation and automatic direction finding equipment.

The great length of the TR-1's wings compared to their short width enables the airplane to soar to extremely high altitudes. Outrigger "pogo" wheels on the wings steady the TR-1 as it takes off on its bicycle-type landing gear. These pogo wheels drop off when the aircraft leaves the ground. During landing, skids on their tips protect the wings from direct contact with the runway.

If necessary, TR-1s will provide all-weather, day-or-night battlefield surveillance to support ground and air forces of the United States and its allies. TR-1s will be able to identify targets and threats well behind lines without penetrating enemy air space.

The first TR-1 squadron was established in 1982 at the Royal Air Force Base at Alconbury, north of London, where they are operated by the USAF Stategic Air Command. Lockheed also has produced two TR-1Bs (a two-seat trainer version of the TR-1), and one ER-2, which has the TR-1 airframe but flies Earth resources missions for the National Aeronautics and Space Administration out of the Ames Research Center near San Jose, Calif.

Lockheed L-1011 TriStar



LOCKHEED L-1011 TRISTAR

Operational data for L-1011-1:
Cruising speed: 495 mph (800 km/h)
Maximum speed: 545 mph (880 km/h)
Empty weight: 234,275 lb. (106,270 kg)
Service ceiling: 42,000 ft. (12,800 m)
Normal range: 2,880 miles (4,630 km)
Number produced by Lockheed: 250

Lockheed-California Company's L-1011 Tristar series of jetliners is a family of advanced technology, wide-bodied commercial transports with a broad range of design options developed to meet airline traffic demands through the rest of the 20th century. Known for its dependability, quiet operation, advanced features and passenger comfort, the versatile L-1011 family consists of four versions: the Dash One, designed to carry 225 to 400 passengers; the Dash 100, which shares the same dimensions as the Dash One but carries additional fuel and has greater range; the Dash 200, which is similar to the Dash 100 but has engines with greater thrust capacity for high-altitude, hot-weather takeoffs; and the Dash 500, which is 13.5 feet (4.1 m) shorter than the other versions and is designed to carry up to 330 passengers over intercontinental routes.

The TriStar family has introduced such fuel-saving developments as the flight management system and extended wing tips with active controls. The TriStar's direct lift control system allows more precise landings. Its famed flying tail gives pilots more positive aircraft control, and the Autoland system allows TriStars to land at fogged-in airports when most other airplanes are being rerouted.

Lockheed announced in December 1981 it would phase out production of the L-1011 due to lack of orders resulting from the severe depression throughout the air transport industry. The company completed the final L-1011 in August 1983. Nevertheless, the TriStar continues to be recognized as the most technologically advanced of the wide-bodied generation of commercial transports.

Lockheed expects L-1011s to remain operational into the next century and is totally committed to maintaining first class product support as long as there are TriStars in service. Among the airlines flying TriStars are Air Canada, British Airways, Delta, Eastern, Gulf Air, Saudi Arabian Airlines, TAP Air Portugal, Trans World Airlines, and United.

Lockheed-California Company

A Division of Lockheed Corporation
Burbank, California 91520

-13 Fotografías + 4

N. Durutta
Lockheed
-California Company

A Division of Lockheed Corporation
P.O. Box 551, Burbank, California 91520

DEPT. NO. 92-01

Alex

Argentina,
South America

0,2007
P.V

FORM 3063-10

ADUANEF
SECC. ENDA
LEG. 1517

PHOTOGRAPH: Do not crush or bend.

AIR MAIL